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THE

PRINCIPLES OF LOGIC

BY

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PREFACE.

THE following work makes no claim to supply any systematic treatment of Logic. I could not pretend to have acquired the necessary knowledge; and in addition I confess that I am not sure where Logic begins or ends. I have adopted the title *Principles of Logic*, because I thought that my enquiries were mainly logical, and, for logic at least, must be fundamental.

I feel that probability is against me. Experience has shown that most books on Logic add little to their subject. There is however one reflection which may weigh in my favour. Both in England and in Germany that subject is in motion. Logic is not where it was, and can not remain where it is. And when one works with the stream a slight effort may bring progress.

I have in general not referred to those works to which I have been indebted. Amongst recent writers I owe most to Lotze, and after him to Sigwart. Wundt's book would have been more useful had it come to me earlier; and I may say the same of Bergmann's. I am under obligations to both Steinthal and Lazarus. And amongst English writers I have learned most from the late Professor Jevons. I may mention here that I should have owed certain observations to Mr. Balfour's able work, had I not seen it first when my book was completed. I should be glad to state my debts in detail, and in this way to express the gratitude I feel, but I doubt if it is now possible. I could not everywhere point out the original owners of my borrowed material, and I could not clearly state how much is not borrowed. I lay no claim to originality, except that, using the result of others' labour, I in some respects have made a sensible advance.

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I wished at first to avoid polemics altogether. But, though I have not sought out occasions of difference, it is plain that too much of my book is polemical. My impression is that it will not suffice to teach what seems true. If the truth is not needed the reader will not work for it, nor painfully learn it. And he hardly will need it where he stands possessed of what seems an easy solution. Philosophy now, as always, is confronted with a mass of inherited prejudice. And, if my polemics bring uneasiness to one self-satisfied reader, I may have done some service.

I fear that, to avoid worse misunderstandings, I must say something as to what is called "Hegelianism." For Hegel himself, assuredly I think him a great philosopher; but I never could have called myself an Hegelian, partly because I can not say that I have mastered his system, and partly because I could not accept what seems his main principle, or at least part of that principle. I have no wish to conceal how much I owe to his writings; but I will leave it to those who can judge better than myself, to fix the limits within which I have followed him. As for the "Hegelian School" which exists in our reviews, I know no one who has met with it anywhere else.

What interests me is something very different. We want no system-making or systems home-grown or imported. This life-breath of persons who write about philosophy is not the atmosphere where philosophy lives. What we want at present is to clear the ground, so that English Philosophy, if it rises, may not be choked by prejudice. The ground can not be cleared without a critical, or, if you prefer it, a sceptical study of first principles. And this study must come short, if we neglect those views which, being foreign, seem most unlike our own, and which are the views of men who, differing from one another, are alike in having given an attention to the subject which we have not given. This, I think, is a rational object and principle, and I am persuaded that a movement which keeps to this line will not be turned back.

In conclusion I may be allowed to anticipate two criticisms which will be passed on my work. One reader will lament

that he is overdone with metaphysics, while another will stand on his right to have far more. I would assure the first that I have stopped where I could, and as soon as I was able. And in answer to the second I can only plead that my metaphysics are really very limited. This does not mean that, like more gifted writers, I verify in my own shortcomings the necessary defects of the human reason. It means that on all questions, if you push me far enough, at present I end in doubts and perplexities. And on this account at least no lover of metaphysics will judge of me hardly. Still in the end perhaps both objectors are right. If I saw further I should be simpler. But I doubt if either would then be less dissatisfied.

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THE PRINCIPLES OF LOGIC.

BOOK I.

JUDGMENT.

CHAPTER I.

THE GENERAL NATURE OF JUDGMENT.

§ 1. It is impossible, before we have studied Logic, to know at what point our study should begin. And, after we have studied it, our uncertainty may remain. In the absence of any accepted order I shall offer no apology for beginning with Judgment. If we incur the reproach of starting in the middle, we may at least hope to touch the centre of the subject.

The present chapter will deal with the question of judgment in general. It will (I) give some account of the sense in which the term is to be used: it will (II) criticize, in the second place, a considerable number of erroneous views: and will end (III) with some remarks on the developement of the function.

I. In a book of this kind our arrangement must be arbitrary. The general doctrine we are at once to lay down, really rests on the evidence of the following chapters. If it holds throughout the main phenomena of the subject, while each other view is in conflict with some of them, it seems likely to be the true view. But it can not, for this reason, be put forward at first, except provisionally.

Judgment presents problems of a serious nature to both

psychology and metaphysics. Its relation to other psychical phenomena, their entangled development from the primary basis of soul-life, and the implication of the volitional with the intellectual side of our nature on the one hand, and on the other hand the difference of subject and object, and the question as to the existence of any mental activity, may be indicated as we pass. But it will be our object, so far as is possible, to avoid these problems. We do not mainly want to ask, How does judgment stand to other psychical states, and in ultimate reality what must be said of it. Our desire is to take it, so far as we can, as a given mental function; to discover the general character which it bears, and further to fix the more special sense in which we are to use it.

§ 2. I shall pass to the latter task at once. Judgment, in the strict sense, does not exist where there exists no knowledge of truth and falsehood; and, since truth and falsehood depend on the relation of our ideas to reality, you can not have judgment proper without ideas. And perhaps thus much is obvious. But the point I am going on to, is not so obvious. Not only are we unable to judge before we use ideas, but, strictly speaking, we can not judge till we use them *as* ideas. We must have become aware that they are not realities, that they are *mere* ideas, signs of an existence other than themselves. Ideas are not ideas until they are symbols, and, before we use symbols, we can not judge.

§ 3. We are used to the saying, "This is nothing real, it is a mere idea." And we reply that an idea, within my head, and as a state of my mind, is as stubborn a fact as any outward object. The answer is well-nigh as familiar as the saying, and my complaint is that in the end it grows much too familiar. In England at all events we have lived too long in the psychological attitude. We take it for granted and as a matter of course that, like sensations and emotions, ideas are phenomena. And, considering these phenomena as psychical facts, we have tried (with what success I will not ask) to distinguish between ideas and sensations. But, intent on this, we have as good as forgotten the way in which logic uses ideas. We have not seen that in judgment no fact ever *is* just that which it

means, or can mean what it is; and we have not learnt that, wherever we have truth or falsehood, it is the signification we use, and not the existence. We never assert the fact in our heads, but something else which that fact stands for. And if an idea *were* treated as a psychical reality, if it were taken by itself as an actual phenomenon, then it would not represent either truth or falsehood. When we use it in judgment, it must be referred away from itself. If it is not the idea *of* some existence, then, despite its own emphatic actuality, its content remains but "a mere idea." It is a something which, in relation to the reality we mean, is nothing at all.

§ 4. For logical purposes ideas are symbols, and they are nothing but symbols. And, at the risk of common-place, before I go on, I must try to say what a symbol is.

In all that is we can distinguish two sides, (i) existence and (ii) content. In other words we perceive both *that* it is and *what* it is. But in anything that is a symbol we have also a third side, its signification, or that which it *means*. We need not dwell on the two first aspects, for we are not concerned with the metaphysical problems which they involve. For a fact to exist, we shall agree, it must be something. It is not real unless it has a character which is different or distinguishable from that of other facts. And this, which makes it what it is, we call its content. We may take as an instance any common perception. The complex of qualities and relations it contains, makes up its content, or that which it is; and, while recognizing this, we recognize also, and in addition, *that* it is. Every kind of fact must possess these two sides of existence and content, and we propose to say no more about them here.

But there is a class of facts which possess an other and additional third side. They have a meaning; and by a sign we understand any sort of fact which is used with a meaning. The meaning may be part of the original content, or it may have been discovered and even added by a further extension. Still this makes no difference. Take anything which can stand for anything else, and you have a sign. Besides its own private existence and content, it has this third aspect. Thus every flower exists and has its own qualities,

but not all have a meaning. Some signify nothing, while others stand generally for the kind which they represent, while others again go on to remind us of hope or love. But the flower can never itself *be* what it *means*.

A symbol is a fact which stands for something else, and by this, we may say, it both loses and gains, is degraded and exalted. In its use as a symbol it foregoes individuality, and self-existence. It is not the main point that *this* rose or forget-me-not, and none other, has been chosen. We give it, or we take it, for the sake of its meaning; and that may prove true or false long after the flower has perished. The word dies as it is spoken, but the particular sound of the mere pulsation was nothing to our minds. Its existence was lost in the speech and the significance. The paper and the ink are facts unique and with definite qualities. They are the same in all points with none other in the world. But, in reading, we apprehend not paper or ink, but what they represent; and, so long as only they stand for this, their private existence is a matter of indifference. A fact taken as a symbol ceases so far to be fact. It no longer can be said to exist for its own sake, its individuality is lost in its universal meaning. It is no more a substantive, but becomes the adjective that holds of another. But, on the other hand, the change is not all loss. By merging its own quality in a wider meaning, it can pass beyond itself and stand for others. It gains admission and influence in a world which it otherwise could not enter. The paper and ink cut the throats of men, and the sound of a breath may shake the world.

We may state the sum briefly. A sign is any fact that has a meaning, and meaning consists of a part of the content (original or acquired), cut off, fixed by the mind, and considered apart from the existence of the sign.*

* It would not be correct to add, "and referred away to another real subject;" for where we think without judging, and where we deny, that description would not be applicable. Nor is it the same thing to have an idea, and to judge it possible. To think of a chimæra is to think of it as real, but not to judge it even possible. And it is not until we have found that all meaning must be adjectival, that with every idea we have even the suggestion of a real subject other than itself.

§ 5. I must be permitted at this point to make a digression, which the reader may omit, if he does not need it. Throughout this volume I do not intend to use the word "symbol" as distinct from "sign," though there is a difference which elsewhere might become of importance. A symbol is certainly always a sign, but the term may be appropriated to signs of a very special character. In contrast with a symbol a sign may be arbitrary. It can not, of course, be devoid of meaning, for, in that case, it would be unable to stand for anything. But it may stand for that with which internally it is not connected, and with which it has been joined by arbitrary chance. But even when signs have a natural meaning, when their content carries us direct to the object of which they are used, yet, if we take symbol in a narrow sense, a natural sign need not be a symbol. We may restrict the term to *secondary* signs. For example a lion is the symbol of courage, and a fox of cunning, but it would be impossible to say that the idea of a fox stands for cunning *directly*. We mean by it first the animal called a fox, and we then use this meaning to stand as the sign for one quality of the fox. Just as the image or presentation of a fox is taken by us in one part of its content, and referred away to another subject, so this meaning itself suffers further mutilation: one part of its content is fixed by the mind and referred further on to a second subject, viz. the quality in general, wherever found. It makes no difference whether we begin with an image or a sensible perception, for the perception itself, before it can be used, must be taken ideally, recognized, that is, in one part of its content. And the distinction again between the symbolism that is unconscious, and that which is reflective, does not touch the main principle.

In order to obviate possible objections, I have thought it best to make these remarks; but since I propose to use sign and symbol quite indifferently, the discussion has hardly any bearing on my argument.

§ 6. We might say that, in the end, there are no signs save ideas, but what I here wish to insist on, is that, for logic at least, all ideas are signs. Each we know exists as a psychical fact, and with particular qualities and relations.

It has its speciality as an event in my mind. It is a hard individual, so unique that it not only differs from all others, but even from itself at subsequent moments. And this character it must bear when confined to the two aspects of existence and content. But just so long as, and because, it keeps to this character, it is for logic no idea at all. It becomes one first when it begins to exist for the sake of its meaning. And its meaning, we may repeat, is a part of the content, used without regard to the rest, or the existence. I have the "idea" of a horse, and that is a fact in my mind, existing in relation with the congeries of sensations and emotions and feelings, which make my momentary state. It has again particular traits of its own, which may be difficult to seize, but which, we are bound to suppose, are present. It is doubtless unique, the same with no other, nor yet with itself, but alone in the world of its fleeting moment. But, for logic, and in a matter of truth and falsehood, the case is quite changed. The "idea" has here become an universal, since everything else is subordinate to the meaning. That connection of attributes we recognize as horse, is one part of the content of the unique horse-image, and this fragmentary part of the psychical event is all that in logic we know of or care for. Using this we treat the rest as husk and dross, which matters nothing to us, and makes no difference to the rest. The "idea," if that is the psychical state, is in logic a symbol. But it is better to say, the idea *is* the meaning, for existence and unessential content are wholly discarded. The idea, in the sense of mental image, is a sign of the idea in the sense of meaning.

§ 7. These two senses of idea, as the symbol and the symbolized, the image and its meaning, are of course known to all of us. But the reason why I dwell on this obvious distinction, is that in much of our thinking it is systematically disregarded. "How can any one," we are asked, "be so foolish as to think that ideas are universal, when every single idea can be seen to be particular, or talk of an idea which remains the same, when the actual idea at each moment varies, and we have in fact not one identical but many similars?" But how can any one, we feel tempted to reply,

suppose that these obvious objections are unknown to us? When I talk of an idea which is the same amid change, I do not speak of that psychical event which is in ceaseless flux, but of one portion of the content which the mind has fixed, and which is not in any sense an event in time. I am talking of the meaning, not the series of symbols, the gold, so to speak, not the fleeting series of transitory notes. The belief in universal ideas does not involve the conviction that abstractions exist, even as facts in my head. The mental event is unique and particular, but the meaning in its use is cut off from the existence, and from the rest of the fluctuating content. It loses its relation to the particular symbol: it stands as an adjective, to be referred to some subject, but indifferent in itself to every special subject.

The ambiguity of "idea" may be exhibited thus. *Thesis*, On the one hand no possible idea can be that which it means. *Antithesis*, On the other hand no idea is anything but just what it means. In the thesis the idea is the psychical image: in the antithesis the idea is the logical signification. In the first it is the whole sign, but in the second it is nothing but the symbolized. In the sequel I intend to use idea mainly in the sense of *meaning*.*

§ 8. For logical purposes the psychological distinction of idea and sensation may be said to be irrelevant, while the distinction of idea and fact is vital. The image, or psychological idea, is for logic nothing but a sensible reality. It is on a level with the mere sensations of the senses. For

* There are psychological difficulties as to universal ideas, and we feel them more, the more abstract the ideas become. The existence and the amount of the particular imagery or sensuous environment, give rise to questions. But these questions need not be considered here, for they have no logical importance whatever. I assume, after Berkeley, that the mental fact contains always an irrelevant sensuous setting, however hard it may be to bring this always to consciousness. But I must repeat that this is not a vital question. It is a mistake in principle to try to defend the reality of universals by an attempt to show them as psychical events existing in one moment. For if the universal we use in logic had actual existence as a fact in my mind, at all events I could not *use* it as that fact. You must at any rate abstract from the existence and external relations, and how much further the abstraction is to go seems hardly an important or vital issue.

both are facts and neither are meanings. Neither are cut from a mutilated presentation, and fixed as a connection. Neither are indifferent to their place in the stream of psychical events, their time and their relations to the presented congeries. Neither are adjectives to be referred from their existence, to live on strange soils, under other skies, and through changing seasons. The lives of both are so entangled with their environment, so one with their setting of sensuous particulars, that their character is destroyed if but one thread is broken. Fleeting and self-destructive as is their very endurance, wholly delusive their supposed individuality, misleading and deceptive their claim to reality, yet in some sense and somehow they *are*. They have existence; they are not thought but given.* But an idea, if we use idea of the meaning, is neither given nor presented but is taken. It can not as such exist. It can not ever be an event, with a place in the series of time or space. It can be a fact no more inside our heads than it can outside them. And, if you take this mere idea by itself, it is an adjective divorced, a parasite cut loose, a spirit without a body seeking rest in another, an abstraction from the concrete, a mere possibility which by itself *is* nothing.

§ 9. These paradoxical shadows and ghosts of fact are the ideas we spoke of, when we said, Without ideas no judgment; and, before we proceed, we may try to show briefly that in predication we do not *use* the mental fact, but only the meaning. The full evidence for this truth must however be sought in the whole of what follows.

(i) In the first place it is clear that the idea, which we use as the predicate of a judgment, is not my mental state as such. "The whale is a mammal" does not qualify real whales by my mammal-image. For that belongs to me, and is an event in my history; and, unless I am Jonah, it can not enter into an actual whale. We need not dwell on this point, for the absurdity is patent. If I am asked, Have you got the idea of a sea-serpent? I answer, Yes. And again, if I am asked, But do you believe in it, Is there a sea-serpent? I understand the difference. The enquiry is not made about

* This statement is subject to correction by Chapter II.

my psychical fact. No one wishes to know if *that* exists outside of my head; and still less to know if it really exists inside. For the latter is assumed, and we can not doubt it. In short the contention that in judgment the idea is my own state as such, would be simply preposterous.

(ii) But is it possible, secondly, that the idea should be the image, not indeed as my private psychical event, but still as regards the whole content of that image? We have a mental fact, the idea of mammal. Admit first that, as it exists and inhabits my world, we do not predicate it. Is there another possibility? The idea perhaps might be used apart from its own existence, and in abstraction from its relations to my psychical phenomena, and yet it might keep, without any deduction, its own internal content. The "mammal" in my head is, we know, not bare mammal, but is clothed with particulars and qualified by characters other than mammality; and these may vary with the various appearances of the image.* And we may ask, Is this *whole* image used in judgment? Is *this* the meaning? But the answer must be negative.

We have ideas of redness, of a foul smell, of a horse, and of death; and, as we call them up more or less distinctly, there is a kind of redness, a sort of offensiveness, some image of a horse, and some appearance of mortality, which rises before us. And should we be asked, Are roses red? Has coal gas a foul smell? Is that white beast a horse? Is it true that he is dead? we should answer, Yes, our ideas are all true, and are attributed to the reality. But the idea of redness may have been that of a lobster, of a smell that of castor-oil, the imaged horse may have been a black horse, and death perhaps a withered flower. And *these* ideas are *not* true, nor did we apply them. What we really applied was that part of their content which our minds had fixed as the general meaning.

* I may point out that, even in this sense, the idea is a product of abstraction. Its individuality (if it has such) is conferred on it by an act of thought. It is *given* in a congeries of related phenomena, and, as an individual image, results from a mutilation of this fact. (Vid. inf. Chap. II.)

It may be desirable (as in various senses various writers have told us) that the predicate should be determinate, but in practice this need can not always be satisfied. I may surely judge that a berry is poisonous, though in what way I know not, and though "poisonous" implies some traits which I do not attribute to *this* poison. I surely may believe that AB is bad, though I do not know his vices, and have images which are probably quite inapplicable. I may be sure that a book is bound in leather or in cloth, though the sort of leather or cloth I must imagine I can not say exists. The details I have never known, or, at any rate, have forgotten them. But of the universal meaning I am absolutely sure, and it is this which I predicate.

The extreme importance of these obvious distinctions must excuse the inordinate space I allot to them. Our whole theory of judgment will support and exemplify them; but I will add yet a few more trivial illustrations. In denying that iron is yellow, do I say that it is not yellow like gold, or topaze, or do I say that it is not any kind of yellow? When I assert, "It is a man or a woman or a child," am I reasonably answered by, "There are other possibilities. It may be an Indian or a girl"? When I ask, Is he ill? do I naturally look for "Oh no, he has cholera"? Is the effect of, "If he has left me then I am undone," removed by, "Be happy, it was by the coach that he deserted you"?

The idea in judgment is the universal meaning; it is not ever the occasional imagery, and still less can it be the whole psychical event.

§ 10. We now know what to understand by a logical idea, and may briefly, and in anticipation of the sequel, dogmatically state what judgment does with it. We must avoid, so far as may be, the psychological and metaphysical difficulties that rise on us.

Judgment proper is the act which refers an ideal content (recognized as such) to a reality beyond the act. This sounds perhaps much harder than it is.

The ideal content is the logical idea, the meaning as just defined. It is recognized as such, when we know that, by itself, it is not a fact but a wandering adjective. In the act of

assertion we transfer this adjective to, and unite it with, a real substantive. And we perceive at the same time, that the relation thus set up is neither made by the act, nor merely holds within it or by right of it, but is real both independent of and beyond it.*

If as an example we take once more the sea-serpent, we have an idea of this but so far no judgment. And let us begin by asking, Does it exist? Let us enquire if "it exists" is really true, or only an idea. From this let us go on, and proceed to judge "The sea-serpent exists." In accomplishing this what further have we done? And the answer is, we have qualified the real world by the adjective of the sea-serpent, and have recognized in the act that, apart from our act, it is so qualified. By the truth of a judgment we mean that its suggestion is more than an idea, that it is fact or in fact. We do not mean, of course, that as an adjective of the real the idea remains an indefinite universal. The sea-serpent, if it exists, is a determinate individual; and, if we knew the whole truth, we should be able to state exactly how it exists. Again when in the dusk I say, That is a quadruped, I qualify the reality, now appearing in perception, by this universal, while the actual quadruped is, of course, much besides four legs and a head. But, while asserting the universal, I do not mean to exclude its unknown speciality. Partial ignorance need not make my knowledge fallacious, unless by a mistake I assert that knowledge as unconditional and absolute.

"Are the angles of a triangle equal to two right angles?" "I doubt if this is so." "I affirm that this is so." In these examples we have got the same ideal content; the suggested idea is the relation of equality between the angles of a triangle and two right angles. And the affirmation, or judgment, consists in saying, This idea is no mere idea, but is a quality of the real. The act attaches the floating adjective to the nature of the world, and, at the same time, tells me it was there already. The sequel, I hope, may elucidate the fore-

* I may remark, that I am dealing at present only with affirmation; the negative judgment presents such difficulties that it can hardly be treated by way of anticipation.

going, but there are metaphysical problems, to which it gives rise, that we must leave undiscussed.

§ 11. In this description of judgment there are two points we may at once proceed to notice. The reader will have observed that we speak of a judgment asserting *one* idea, or ideal content, and that we make no mention of the subject and copula. The doctrine most prevalent, on the other hand, lays down that we have always *two* ideas, and that one is the subject. But on both these heads I am forced to dissent. Our second chapter will deal further with the question, but there are some remarks which may find a place here.

(i) It is not true that every judgment has two ideas. We may say on the contrary that all have but one. We take an ideal content, a complex totality of qualities and relations, and we then introduce divisions and distinctions, and we call these products separate ideas with relations between them. And this is quite unobjectionable. But what is objectionable, is our then proceeding to deny that the whole before our mind is a single idea; and it involves a serious error in principle. The relations between the ideas are themselves ideal. They are not the psychical relations of mental facts. They do not exist between the symbols, but hold in the symbolized. They are part of the meaning and not of the existence. And the whole in which they subsist is ideal, and so one idea.

Take a simple instance. We have the idea of a wolf and we call that one idea. We imagine the wolf eating a lamb, and we say, There are two ideas, or three, or perhaps even more. But is this because the scene is not given as a whole? Most certainly not so. It is because in the whole there exist distinctions, and those groupings of attributes we are accustomed to make. But, if we once start on this line and deny the singleness of every idea which embraces others, we shall find the wolf himself is anything but one. He is the synthesis of a number of attributes, and, in the end, we shall find that no idea will be one which admits any sort of distinction in itself. Choose then which you will say, There are no single ideas, save the ideas of those qualities which are too

simple to have *any* distinguishable aspects, and that means there are no ideas at all—or, Any content whatever the mind takes as a whole, however large or however small, however simple or however complex, is one idea, and its manifold relations are embraced in an unity.*

We shall always go wrong unless we remember that the relations within the content of any meaning, however complex, are still not relations between mental existences. There is a wolf and a lamb. Does the wolf eat the lamb? The wolf eats the lamb. We have a relation here suggested or asserted between wolf and lamb, but that relation is (if I may use the word) not a *factual* connection between events in my head. What is meant is no psychical conjunction of images. Just as the idea of the wolf is not the whole wolf-image, nor the idea of the lamb the imagined lamb, so the idea of their synthesis is not the relation as it exists in my imagination. In the particular scene, which symbolizes my meaning, there are details that disappear in the universal idea, and are neither thought of nor enquired after, much less asserted.

To repeat the same thing—the imagery is a sign, and the meaning is but one part of the whole, which is divorced from the rest and from its existence. In this ideal content, there are groups and joinings of qualities and relations, such as answer to nouns and verbs and prepositions. But these various elements, though you are right to distinguish them, have no validity outside the whole content. That is one idea, which contains all ideas which you are led to make in it; for, whatever is fixed by the mind as one, however simple or complex, is but one idea. But, if this is so, the old superstition that judgment is the coupling a pair of ideas must be relinquished.

§ 12. I pass now (ii) to the other side of this error, the doctrine that in judgment one idea is the subject, and that the judgment refers another to this. In the next chapter this

* The psychological controversy as to the number of ideas we can entertain at once, can hardly be settled till we know beforehand what is one idea. If this is to exclude all internal complexity, what residuum will be left? But, if it admits plurality, why is it one idea? If, however, what otherwise we should call plurality, we now call single just because we have attended to it as one, the question must clearly alter its form.

view will be finally disposed of, but, by way of anticipation, we may notice here two points. (*a*) In "wolf eating lamb" the relation is the same, whether I affirm, or deny, or doubt, or ask. It is therefore not likely that the *differentia* of judgment will be found in what exists apart from all judgment. The *differentia* will be found in what differences the content, as asserted, from the content as merely suggested. So that, if in all judgment it were true that one idea is the subject of the assertion, the doctrine would be wide of the essence of the matter, and perhaps quite irrelevant. But (*b*) the doctrine (as we shall see hereafter) is erroneous. "B follows A," "A and B coexist," "A and B are equal," "A is south of B" —in these instances it is mere disregard of facts which can hold to the doctrine. It is unnatural to take A or B as the subject and the residue as predicate. And, where existence is directly asserted or denied, as in, "The soul exists," or, "There is a sea-serpent," or, "There is nothing here," the difficulties of the theory will be found to culminate.

I will anticipate no further except to remark, that in every judgment there is a subject of which the ideal content is asserted. But this subject of course can not belong to the content or fall within it, for, in that case, it would be the idea attributed to itself. We shall see that the subject is, in the end, no idea but always reality; and, with this anticipation, we must now go forward, since we have finished the first division of this chapter: we must pass from the general notion of judgment to the criticism of certain erroneous views, a criticism, however, which is far from exhaustive, and in some points must depend for its fuller evidence upon the discussions of the following chapters.

II. § 13. Wrong theories of judgment naturally fall into two classes, those vitiated by the superstition of subject predicate and copula, and those which labour under other defects. We will take the last first.

(i) Judgment is neither the association of an idea with a sensation, nor the liveliness or strength of an idea or ideas. At the stage we have reached, we need subject these views to no detailed examination. The ideas which they speak of are

psychical events, whereas judgment, we have seen, has to do with meaning, an ideal content which is universal, and which assuredly is not the mental fact. While all that we have is a relation of phenomena, a mental image, as such, in juxtaposition with or soldered to a sensation, we can not as yet have assertion or denial, a truth or a falsehood. We have mere reality, which *is*, but does not stand for anything, and which exists, but by no possibility could be *true*.

We will not anticipate the general discussion of "Association" (vid. Book II. Part II. Chap. I.), and will pass by those extraordinary views the school holds as to universals. We will come at once to the result. There is an idea, in the sense of a particular image, in some way conjoined with or fastened to a sensation. I have, for instance, sensations of coloured points; and images of movement and hardness and weight are "called up" by these sensations, are attracted to, and cohere with them. And this sounds very well till we raise certain difficulties. An orange presents us with visual sensations, and we are to add to these the images just mentioned. But each of these images is a hard particular, and qualified by relations which exclude it from all others. If you simply *associate* this bundle of facts, who would take them as one fact? But if you blend their content, if, neglecting the existence, you take a part of the quality of each, and transfer *that* to the object, then you may call your process by what name you please, but it certainly *is* not association. (Vid. infr. Book II.)

But let us suppose that the ideas are united somehow with the sensation, yet where is the judgment, where is truth or falsehood? The orange is now before my sense or imagination. For my mind it exists, and there is an end of it. Or say, "Cæsar will be angry." Cæsar here is the perception, which, when further qualified, becomes "Cæsar angry." But this image again is simply what it is, it does not stand for anything, and it can mean nothing.

Let us suppose in the first place that the "idea" maintains itself, then no doubt, as one fact, it stands in mental relation with the fact of the sensation. The two phenomena coexist as a headache may coexist with a syllogism; but such

psychical coherence is far from assertion. There is no affirmation; and what is there to affirm? Are we to assert the relation between the two facts? But that is given, and either to assert it or deny it would be senseless.* Is one fact to be made the predicate of another fact? That seems quite unintelligible. If in short both sensation and idea are facts, then not only do we fail to find any assertion, but we fail to see what there is left to assert.

But in the second place (giving up association proper) let us suppose that the "idea," as such, disappears, and that its mutilated content is merged in the sensation. In this case the whole, produced by blending, comes to my mind as a single presentation. But where is the assertion, the truth or falsehood? We can hardly say that it lies in the bare presentation itself. We must find it, if anywhere, in the relation of this presentation to something else. And that relation would be the reference of judgment. But on the present view both the something else and the reference are absent. We have first an unmodified and then a modified sensation.

The only way to advance would be to suppose, in the first place, that, while the "idea" maintains itself, it is distinguished from its content; and to suppose, in the second place, that both of these are distinguished from the sensation. We have then two facts, a sensation and an image, and beside these a content held apart from the image. We have now reached a condition which would make judgment possible, but the advance to this condition is not explicable by Association. Nor could the further steps be accounted for. You have the transference of the content from the image to the sensation, and the qualification of the latter as a subject; but both would be inexplicable. We may add that it is impossible for a sensation or sensations to serve as the subject in every judgment (vid. Chap. II.). And finally the consciousness that, what my act joins, is joined apart from it, is a fact not compatible with the psychology we are considering. To sum up the whole—To merge the content of an image in a modified presentation, is but one step towards judgment, and

* We might say that, on this view, the denial of a falsehood must *ipso facto* be false.

it is a very long step beyond association. While conjunction or coherence of psychical phenomena is not only *not* judgment, but would not serve as its earliest basis and beginning.*

§ 14. But the definition I shall be told is a "*lively* idea associated with a present impression," and I shall be asked if *lively* makes no difference. And I answer, Not one particle; it makes no difference, even if you suppose it true, and in addition it is false. The liveliness removes none of the objections we have been developing. Let it be as lively as you please, it is a mere presentation, and there is no judgment. The liveliness of the idea not only *is* not judgment, but it is not always even a condition. The doctrine that an idea judged true *must* be stronger than one not so judged, will not bear confrontation with the actual phenomena. You may go on to increase an idea in strength till it passes into a sensation, and there yet may be no judgment. I will not dwell on this point, since the unadulterated facts speak loudly for themselves, but will give one illustration. We most of us have at times the images of the dead, co-inhabitants of the rooms we once shared with the living. These images, mostly faint, at times become distressing, from their strength and particularity and actual localization in those parts of the room which we do not see. In an abnormal state such images, it is well known, may become hallucinations, and take their place in the room before our eyes as actual perceptions. But with an educated man they would be recognized as illusions, and would not be judged to be outwardly real, any more than the fainter and normal images are judged to be anywhere but in our own minds. Yet lively ideas associated with present impressions —if we have not got them here, where are they?

§ 15. We turn with relief from the refutation of a doctrine,

* It has been often remarked that, on Hume's theory of belief, there can *be* no difference between imagination and reality, truth and falsehood, and that why we *make* this difference is incomprehensible. J. S. Mill with great openness professed on this head the total bankruptcy of the traditional doctrine. He seems somehow to have thought that a complete break-down on a cardinal point was nothing against the main doctrine of his school, nor anything more than a somewhat strange fact. It was impossible that he should see the real cause of failure. We shall deal with Professor Bain's views lower down.

long dead and yet stubbornly cumbering the ground, to consider a fresh error, the confusion of judgment with practical belief. I cannot enquire how far *any* psychical activity is consistent with the theory of Professor Bain, nor can I discuss the nature of a psychical activity which seems physiologically to consist in muscular innervation; though I am bound to add that (doubtless owing to my ignorance) Professor Bain's physiology strikes me here as being astonishingly misty. And I must pass by the doubt whether, if we accept his view, we shall find the confusion between image and meaning in any way lessened.

We must remember that the question, Is judgment always practical, does not mean, Is the will in any way concerned in it. In that case it might be argued that *all* generation of psychical phenomena comes under the head Will. The question means, Does the essence of judgment lie, not in the production of truth and falsehood—states which alter nothing in the things they represent—but rather in the actual production of a change in real existence. Or, more simply, when an idea is judged to be true, does this mean that it *moves* some other phenomenon, and that its assertion or denial is nothing but this motion? The doctrine admits that an idea or ideas, when held true, differ vitally from the same when suggested; and it proceeds to assert that the *differentia* is the effect of the idea on our conduct, and that there is no other *differentia* at all.

There is a logical mistake we may point out before proceeding, for it is the error which has led Professor Bain astray. Assume that an asserted idea causes action, and that an idea, not believed in, does not influence conduct. From these premises can we conclude, Therefore judgment *is* influence? If, in other words, when A changes to B, we have an unfailing difference q, and q is not found except after A, does this warrant the assertion, that the alteration consists in q? Is it not quite possible that q follows from p, and that p is what really turns A into B? We shall do well to keep our eye on this logical fallacy. The assertion we are to examine is *not* that practical influence induces us to judge, or results from a judgment: What is asserted is that judgment *is* nothing else whatever.

Against this false *differentia* I shall briefly maintain, (*a*) that the *differentia* may be absent from the fact, (*b*) that it may be present with other facts, (*c*) that the fact contains other characteristics, which are the true *differentia*, and are absent from the false one, (*d*) that the latter has a positive quality which excludes the fact.

(*a*) If we test the theory by abstract instances such as, The angles of a triangle are equal to two right angles, it collapses at once. It is impossible to find always a practical influence exerted by the ideas. We may be answered "But they *might* exert it, you surely *would* act on them." And such an answer may pass in the school of "Experience;" but a poor "transcendentalist" will perhaps be blamed if he usurps such a privilege. He at least is not allowed to take tendency and possibility and mere idea for fact. And he can hardly be prevented from pressing the question, Is the influence there or not? If it is not there, then either Professor Bain's theory disappears, or he should alter his definition, and say that an idea passes into a judgment when enriched by potentialities and eventual tendencies. If these are *not* ideas we should be told *what* they are; but if they are only ideas that go with the first ideas, then our answer is plain. In the first place it is not true that they are always there: in the second place it is not true that, when added, they must exert a practical influence.

(*b*) In the second place ideas may influence me, though I never do hold them for true. The feelings and emotions associated with an idea can often prevent or produce volitions, although the idea is not affirmed as true, and even while it is recognized as false. Though I do not believe that a slow-worm can bite, or a drone can sting, I may shrink from touching them. I may avoid a churchyard though I believe in no ghosts. An illusion no doubt, if recognized as such, does not influence volition either so much, or always in the same way; but still it may operate in spite of disbelief.* And it can hardly be a true view which forces us to say, If

* It may be said that *when* it operates the denial is suspended. But I confess I can find no ground for such a statement. At any rate it is certain that the idea can operate though a positive judgment is not there.

you judged it an illusion you would wholly disregard it, for such disregard *is* judgment.

I will not dwell on a point it would be easy to illustrate. In passing, however, I may remind the reader of that class of ideas which influences our actions without seeming to be true. I refer to practical ideas, the representation of a satisfied desire which is now felt to be unsatisfied. It is certain that these move us to active pursuit, and it is equally certain they are not judged to be real; for if they were, then for that reason, they would fail to move us.*

(*c*) But suppose that all judgment did really move to action. Would this show that judgment was nothing but such motion? Most certainly not so. We can observe what takes place in us, when a suggested idea is judged to be true; and clearly an activity (however hard to describe) does show itself there, and yet is not directed (except *per accidens*) towards making a change in the world and in ourselves. And if this true *differentia* can be verified, that should settle the question. And again, apart from direct observation, we can argue indirectly. Assertion and denial, together with the difference of truth and falsehood, are real phenomena, and there is something in them which falls outside the influence of ideas on the will. It is comic if the judgment, It will rain to-morrow, is the same as buying an umbrella to-day; or, Put on your thick boots, is a truer form of, It rained hard yesterday. And when a child sees a berry and, as we say, judges, It made me sick before, it seems strange that the act of affirmation should consist in practical abstention to-day and should be nothing else.

(*d*) And not only are the genuine characteristics absent from a mere practical attitude, but we find present there a quality which is absent from real judgment. The truth of a suggestion is not a matter of degree, and the act which attributes an idea to reality either refers it, or does not refer it. It can hardly do either a little more or less and to a certain degree (cf. Chap. VII.). In strictness of speech all half-truths are no truths, and, "It is more or less true," really

* I may refer on this point to my *Ethical Studies*, Essay VII.

means, "It is true with a qualification," or "More or less of it is true, though as a whole it is not true." But the practical influence of ideas must have degree, and so possess a quality which judgment has not.

For these reasons, each of which can stand almost alone, it seems clear that the doctrine before us has failed. And one cause of the error seems to lie in the neglect of some important distinctions we may proceed to notice. Judgment is primarily logical, and as such has no degrees; the relation of the ideal content to reality must be there or not there. Belief, on the other hand, is primarily psychological, and, whether theoretic or practical, exists in a degree. (*a*) Intellectual belief or conviction is the general state which corresponds to the particular acts of judgment. To believe that A is B may mean that, whenever the idea A–B is suggested, I go on to affirm it; or, further, that the idea fills much space in my mind, is a persistent habit and ruling principle, which dominates my thoughts and fills my imagination, so that the assertion A–B is frequently made and has wide intellectual ramifications and connections. I should believe A–B less, if it more seldom arose, by itself or by implication, and had inferior influence. I should believe less still if, when A–B was suggested, I sometimes doubted it; and even less, if I affirmed it more seldom, and then with hesitation, against doubts, and with inability to maintain the attitude. On the other hand I should not believe at all, if I only were more or less convinced, perceiving more or less reason on both sides, inclined in one direction, but unable to cross the line and to affirm. (*b*) But in practical belief, beside these degrees of intellectual conviction, there is another element of more and less. Not only is the truth of the intellectual content more or less present, but in addition it can influence my will more or less. A desire stronger or more persistent, or more dominant generally, may answer to it on the one side, or on the other a weaker and more fleeting impulse. Beside existing more or less, it can move more or less. It is, I think, not easy to keep clear of confusion unless these ambiguities are noticed and avoided. But the main logical mistake which Professor Bain has committed is to argue from the (false) premise, "Belief must

induce action" to the inconsequent result "Belief *is* that inducement."*

§ 16. (ii) Leaving now the first group of erroneous views we may proceed to consider another collection. These may be classed as labouring under a common defect, the false notion that in judgment we have a pair of ideas. We were engaged with this fallacy in § 11, and it will meet us again in the following chapter, so that here some brief remarks may suffice. In their ordinary acceptation the traditional subject, predicate, and copula are mere superstitions. The ideal matter which is affirmed in the judgment, no doubt possesses internal relations, and in *most* cases (not *all*) the matter may be arranged as subject and attribute. But this content, we have seen, is the same both in the assertion and out of it. If you ask instead of judging, what is asked is precisely the same as what is judged. So that it is impossible that this internal relation can itself *be* the judgment; it can at best be no more than a condition of judging. We may say then, if the copula is a connection which couples a pair of ideas, it falls outside judgment; and, if on the other hand it is the sign of judgment, it does not couple. Or, if it *both* joined *and* judged, then judgment at any rate would not be *mere* joining. I will dwell here no more on the general error. We shall see its effects in some mistaken views we may proceed to notice.

(*a*) Judgment is not inclusion in, or exclusion from, a class. The doctrine that in saying, "A is equal to B," or "B is to the right of C," or "To-day precedes Monday," I have in my mind a class, either a *collection* or a *description*, of "things

* In the third edition of his *Emotions* (1875) Prof. Bain apparently reconsiders the question, but I can neither tell if he abandons his theory, nor what it is that, if so, he puts in its place. As I am entirely unable to understand this last theory, my remarks must be taken to apply to the earlier one. Since this volume was written I have made acquaintance with Mr. Sully's criticism on Prof. Bain's doctrine (*Sensation and Intuition*. 2nd ed. 1880). But *he*, I find, treats Prof. Bain's third edition (1875), in which an earlier edition of his own criticism is treated with the greatest respect, as if it either had no existence, or at all events was somehow irrelevant to the issue. For myself I must say that for the reason given above I confine myself to the earlier theory.

equal to B," or "to the right of C," or "preceding Monday," is quite opposed to fact. It is as absurd as the assertion that, in "It is our son John," or "It is my best coat," or "$9=7+2$," I think of a class of "our sons John," or "my best coats," or "that which is equal to $7+2$." If the view stood apart from implied preconceptions, and by itself as an interpretation of fact, it would scarcely, I think, be so much as discussed. And, as we shall be forced to recur to it hereafter (Chap. VI.), we may so leave it here.

(*b*) Judgment is not inclusion in, or exclusion from, the subject. By the subject I mean here not the ultimate subject, to which the whole ideal content is referred, but the subject which lies within that content, in other words the *grammatical* subject. In "A is simultaneous with B," "C is to east of D," "E is equal to F," it is unnatural to consider A, C, and E as sole subjects, and the rest as attributive. It is equally natural to reverse the position, and perhaps more natural still to do neither, but to say instead, "A and B are synchronous," "C and D lie east and west," "E and F are equal." The ideal complex, asserted or denied, no doubt in most cases will fall into the arrangement of a subject with adjectival qualities, but in certain instances, and those not a few, the content takes the form of two or more subjects with adjectival relations existing between them. I admit you may torture the matter from the second form into the first, but, if torture is admitted, the enquiry will become a mere struggle between torturers. It requires no great skill to exhibit every subject together with its attributes as the relation between independent qualities (subjects), or again even to make that relation the subject, and to predicate all the remainder as an attribute. Thus, in "A is simultaneous with B," it is as easy to call "exists in the case of AB" an attribute of simultaneity, as it is to call "simultaneous with B" an attribute of A. We may finally observe that existential judgments do not lend themselves easily to the mistake we are considering. And such negative judgments as "Nothing is here," will be found hard to persuade. But on both these points I must refer to the sequel (Chaps. II. and III.).

(*c*) Judgment is not the assertion that subject and

predicate are identical or equal. This erroneous doctrine is the natural result of former errors. You first assume that in judgment we have a relation between two ideas, and then go on to assume that these ideas must be taken in extension. But both assumptions are vicious: and, if we consider the result, asking not if it is useful but whether it is true, we can hardly, I think, remain long in hesitation. That in "You are standing before me," or "A is north of C," or "B follows D," what we really *mean* is a relation, either of equality or identity, is simply incredible: and torture of the witness goes to such lengths that the general public is not trusted to behold it.*

However useful within limits the equation of the terms may be found, if you treat it as a working hypothesis (vid. Book II. Part II. Chap. IV.), yet as a truth it will not bear any serious examination. Let us look at it more closely.

(i) If what is asserted be *equality*, then that of course is identity in *quantity*, and is nothing else whatever. And I must venture to complain of the reckless employment of this term. To use the sign = for *qualitative* sameness, or for individual identity (I do not ask here if these are different), is surely barbarous. No harm perhaps may come, but there should be some limit to the abuse and confusion we allow ourselves in practice. Let us then first take equality in its proper sense, to stand for an identity in respect of quantity. But, if so, if the subject and predicate are equated, if "Negroes are men," when written "All negroes = some men," is on a level with $2 = 12 - 10$—if what is said and signified is that between the terms, if you compare them numerically, there is no difference whatever, we can at once pass on. It is certain that *some* judgments, at least, can not express this relation of quantity, and it is certain again that, of those which can, it is only a very small class which do. Illustration is hardly wanted. "Hope is dead" would mean that, "In hope and a fraction of dead things there is exactly the same sum of units." And, in asserting that "Judgment is not an equation," I should express my belief that to divide both by 2 would not give the same quantity.

* Vid. Jevons, *Principles of Science*, Chap. I. § 12.

But the sign = does not seem to mean equality. It does not mean that the units of the subject and predicate are identical in *quantity*. It would appear to mean that they are the same altogether. The identity it asserts is not quantitative, but seems absolute. In "All Negroes = some men," the " = " represents exclusion of difference both quantitative and qualitative.

(ii) The identity is (*a*) not likeness: it is not a relation consisting in a partial qualitative identity, definite or indefinite. "Iron = some metal" can hardly mean "Some metal is similar to iron." Not only do the facts exclude this interpretation, but the theory would not work with it. If "similars" and "likeness" are phrases that occur, this is a proof that here, as in the case of =, the theory does not mean what it says, or quite know what it is doing. That when A is *like* B you may write one for the other, is of course quite untrue (cf. Book II.).

(*b*) The identity again is not definitely partial, consisting in sameness in some particular point or points of quality. For, on this interpretation, you could make no advance, until the point of sameness had been specified. And even then the equational theory would not work.

(*c*) Unless we suppose that both sides differ only in name, and that this difference of names is the import of the judgment—a view we shall glance at in a future chapter (Chap. VI.)—we must take the sign = to mean total sameness to the exclusion of *all* difference. But, if so, the theory must reform itself at once, if it desires to be consistent. It will not be true that "Negroes = some men," for certainly "some men" are not " = negroes." Nor again will it be true that negroes are equal to a certain stated fraction of mankind. That stated fraction is an universal adjective which might be applicable to other men as well as to negroes. If "is" or " = " stands for "is the same as," then it is as false to say "A *is* $\frac{1}{3}$B" as it was before to say "A *is* some B." "Some B" covers not only the B which is A: it may hold just as much of the other B, which we take as not-A. And it is so with "$\frac{1}{3}$B": that applies just as much to the $\frac{2}{3}$ which are not-A, as it does to the third which is identical with A. The quantification of the

predicate is a half-hearted doctrine, which runs against facts, if " = " does mean *equal*, is ridiculous if " =" comes to no more than plain "*is*," and is downright false if " = " stands for "*is the same as.*"

To be consistent we must not merely quantify the predicate, we must actually specify it. The men that are negroes are not any and every set of men, who have a certain number. They are those men who *are* negroes, and *this* is the predicate. Negroes = negro-men, and iron = iron-metal. The predicate now really and indeed seems the subject, and can be substituted for it. The idea is a bold one, and its results have been considerable ; but if we look not at working power but at truth, the idea is not bold enough, and wants courage to remove the last contradiction.

That A should be truly the same as AB, and AB entirely identical with A, is surely a somewhat startling result. If A = A, can it also be true that to add B on *one* side leaves the equation where it was ? If B does not mean 0, one would be inclined to think it must make some difference. But, if it does make a difference, we can no longer believe that A = AB, and AB = A. If " iron-metal " is the same as " iron," how misleading it is to set down the two sides as different terms. If there really is a difference between the two, then your statement is false when by your " = " you deny it. But if there is no difference, you are wrong in affirming it, and in opposing " iron " to " iron-metal."

There is only one issue. If A is AB, then the A that *is* AB is not A but —AB. Both sides of the assertion are just the same, and must be so stated. Negro-men are negro-men, and iron-metal is iron-metal.* For consider the dilemma. B either is or is not an addition to A. If it is not an addition, its insertion is gratuitous ; it means nothing on either side, may fall upon whichever side we choose, is absurd on both alike, and should be got rid of—then A = A. But if B is an addition, then A = AB cannot be true. We must add B on both sides, and AB = AB. In short B must disappear or have a place on each side.

We have now reached consistency, and the reader may

* Cf. Lotze, *Logik*, 80–2.

ask, Is the result still false? I do not like to seem obstinate, and I prefer to reply, Do you think it is true? I will accept your answer. If you say that identical propositions are all false, I shall not contradict you (cf. Chap. V. § 1), for I also believe that a judgment which asserts no difference is nothing. But if you pronounce on the side of truth, I should like to ask a question. For an assertion to be true must it not assert something, and what is it that you take to be asserted above? That where there is no difference, there is no difference, that AB will be AB as long as it is AB? You can hardly mean that. Is the *existence* of AB what is secretly asserted? But, if so, we should say openly "AB exists," and our reduplication of AB is surely senseless. We know that it exists, not because we double it, but, I suppose, because we know of its existence.

But what then do we assert by AB = AB? It seems we must own that we do not assert anything. The judgment has been gutted and finally vanishes. We have followed our premises steadily to the end, and in the end they have left us with simply nothing. In removing the difference of subject and predicate we have removed the whole judgment.*

§ 17. We have seen the main mistakes of the foregoing doctrines. It is a more pleasing task to consider the main truth which each one of them has seized. (i) The views we began to criticize in § 13, have avoided the error of subject predicate and copula. They have seen that in judgment the number of ideas is not the main question, and that the essence of the matter does not lie in the ideas, but in some-

* It is not worth while to criticize in detail a doctrine we can show is fallacious in principle. Cf. Chap. VI. But among minor objections to the quantification of the predicate is its claim to silence you, and prevent you from saying what indubitably you know. It tells you you must not say "A is B," unless you also certify *how much* of B is A. But, even supposing that "so much of B" is the truth that you would affirm if you could, in numerous cases you can not affirm it. You know that A possesses a quality B, and, as to how the B, that is A, stands in extent to the B which is not A, you have no information. You must either then decline to quantify, or must abstain from speaking the truth you know. But it is not worth while to criticize in detail.

thing beyond them. Nor, to be more particular, is the implication of will in all judgment a complete mistake. It is true that, in an early stage of developement, the intelligence is so practical that it hardly can be said to operate independently. It is true again that, in the evolution of self-consciousness, the opposition of idea and reality depends, to a degree I will not here discuss, upon volitional experience. And in these points there is truth in the theory, which, however much he may abandon it, we shall place to the credit of Professor Bain. And the view that in judgment we have an association of idea with sensation, and a coalescence of both elements, is far from being wholly destitute of truth. For (as we shall see in the following Chapter) the subject in all judgment is ultimately the real which appears in perception: and again it holds good that the lowest stage, in the developement of judgment and inference alike, is the redintegration of ideal elements with sensuous presentation, in such a manner that the two are not distinguished, but run into one whole.

(ii) And from the second class of errors we may also collect important results. In the first place it is true that the content asserted is always complex. It can never be quite simple, but must always involve relations of elements or distinguishable aspects. And hence, after all, in judgment there must be a plurality of ideas. And, in particular, (*a*) though it is false that the predicate is a class in which the subject is inserted, and a fundamental error to take the universal in the form of a collection, yet it is entirely true that the predicate must be always an universal. For every idea, without exception, is universal. And again (*b*) though assertion is not attribution to a subject in the judgment, though it is false that the grammatical subject is the reality of which the predicate is held true, yet in every judgment there must be a subject. The ideal content, the adjective divorced, is made real once again by union with a substantive. And (*c*) the doctrine of equation, or identity of the terms, has itself grasped a truth, a truth turned upside down and not brought to the light, but for all that a deep fundamental principle.

Turned upside down, and made false, it runs thus. The object of judgment is, despite their difference in meaning, to assert the identity of subject and predicate when taken in extension. But turned the right way up it runs thus. The object of judgment is, under and within the identity of a subject, to assert the synthesis of different attributes. Whenever we write " = " there must be a difference, or we should be unable to distinguish the terms we deal with (cf. Chap. V.). And when a judgment is turned into an equation, it is just this difference that we mean to state. In "S = P" we do *not* mean to say that S and P are identical. We mean to say that they are *different*, that the diverse attributes S and P are united in one subject; that S – P is a fact, or that the subject S is not bare S, but also S – P. And the reason why the theory of equation works, and is not mere nonsense, is that in fact it is an indirect way of stating difference. "The subject is the same" implies, and may be meant to convey, the truth that the attributes differ. We must refer to the sequel for further explanation, but at present our concern is briefly to point out that an identity must underlie every judgment.

But how is this possible? "A is prior to B," or "to the left of C," or "equal to D." The judgment asserts the equality, or sequence, or position of two subjects, and it surely does not say that both are the same. We must try to explain. We saw that all judgment is the attribution of an ideal content to reality, and so this reality is the subject of which the content is predicated. Thus in "A precedes B," this whole relation A – B is the predicate, and, in saying this is true, we treat it as an adjective of the real world. It is a quality of something beyond mere A – B. But, if this is so, the reality to which the adjective A – B is referred is the subject of A – B, and is the identity which underlies this synthesis of differences.

It is identical, not because it is simply the same, but because it is the same amid diversity. In the judgment, beside the mere distinction of the terms, we have an opposition in time of A to B. And the subject of which A – B is asserted, being subject to these differences, is thus different

in itself, while remaining the same. In this sense every judgment affirms either the identity which persists under difference, or the diversity which is true of one single subject. It would be the business of metaphysics to pursue this discussion into further subtleties. We should there have to ask if, in the end, every possible relation does not involve a something *in* which it exists, as well as somethings *between* which it exists, and it might be difficult to reconcile the claims of these prepositions. But we have already reached the limit of our enquiries. The real subject which is implied in judgment, will meet us again in the following Chapter; and that, we hope, may make clearer some points which at present remain obscure.

III. § 18. We have given some preliminary account of judgment, and have tried to dispose of some erroneous views. We pass now to our third task, and must make some remarks on the developement of the function. As we have defined it above, judgment does not show itself at all the stages of psychical evolution. It is a comparatively late acquisition of the mind, and marks a period in its upward growth. We should probably be wrong if we took it as a boundary which divides the human from the animal intelligence; and in any case we should be ill-advised to descend here into the arena of theological and anti-theological prejudice (vid. Book III. Part I. Chap. VII.). It is better to treat the mind as a single phenomenon, progressing through stages, and to avoid all discussion as to whether the lines, by which we mark out this progress, fall across or between the divisions of actual classes of animals. Thus with judgment we are sure that, at a certain stage, it does not exist, and that at a later stage it is found in operation; and, without asking where the transition takes place, we may content ourselves with pointing out the contrast of these stages. The digression, if it be such, will throw out into relief the account we have already given of judgment. For judgment is impossible where truth and falsehood, with their difference, are not known; and this difference cannot be known where ideas are not recognized and where nothing exists for the mind but fact.

§ 19. I do not mean that the lower forms, or that any form, of soul-life is confined to the apprehension of simple sensations. If the soul is ever the passive recipient of a given product, to which it does not contribute and which it does not idealize, yet in all actual mind a further step is made, and we always possess more than what is given through sense. The impression, so to speak, is supplemented and modified by an ideal construction, which represents the results of past experience. And thus, in a sense, the lowest animals both judge and reason, and, unless they did so, they must cease to adjust their actions to the environment. But, in the strict sense, they can neither reason nor judge; for they do not distinguish between ideas and perceived reality.

That the thing as it is, and as it appears in perception, are not the same thing, is, we all are aware, a very late afterthought. But it is equally an afterthought, though not equally late, that there is any kind of difference between ideas and impressions. For a more primitive mind a thing is or it is not, is a fact or is nothing. That a fact should be, and should yet be an appearance, should be true of, and belong to, something not itself; or again should be illusion, should exist and yet be false, because its content is an adjective neither of itself nor of any other substantive—these distinctions are impossible for an early intelligence. A nonentity is not anything it can apprehend, and to it an error is never an illusion. And hence for this mind ideas never could be symbols. They are facts because they *are*.

§ 20. The presentations of the moment, the given sensations, are received into a world of past experience, and this past experience now appears in the form of ideal suggestion. In the lowest stages of mind there is as clear a difference between the *datum* that is given and the construction that is made, as there can be in the highest. But it is one thing to have a difference in the mind and another to perceive it: and for an early intelligence this contrast between sensation and idea, is quite non-existent. A presentation AB, by a feeling *d*, produces an action $\delta\epsilon$, or, by an ideal transition *b–d*, is transformed into ABD; or may become AC, by the action of *a–g*, if *g* banishes B, and *c* is supplied. But, in all these cases, and in

any other possible case, the process remains entirely latent. The product is received as a mere given fact, on a level with any other fact of sense.

If the object, as first perceived, could be compared with the object as finally constructed, there might be room for a doubt if the fact has become, or has been made by the mind. And still more if the ideas which perception excludes were ever attended to; if rejected suggestion, conflicting supplement, wrong interpretation, and disappointed action, were held before the mind, then a reflection might take place, which would antedate the slow result of developement; and the sense of illusion would awaken the contrast of idea and reality, truth and falsehood. But all this is impossible. For the leading feature of the early mind is its entire and absolute practicality. The fact occupies the soul no longer and no further than it tends to produce immediate action. The past and the future are not known except as modifications of the present. There is no practical interest in anything but the given, and what does not interest is not anything at all. Hence nothing is retained in its original character. The object, in its relation to present desire, changes ceaselessly in conformity with past adventures of failure or success. It contracts or extends itself, as the case may be, but it still remains the mere given object. And while the ideas it assimilates become part of presentation, the ideas it excludes are simply nothing at all.

At a late stage of mind, among intelligent savages, the doctrine of a dream-world brings home to us the fact, that a mere idea, which exists and is unreal, is a thought not easy to lay hold of thoroughly. And, if we descend in the scale no further than to dogs, we are struck by the absence of theoretical curiosity. Let them see an appearance to be not what it seemed, and it instantly becomes a mere nonentity. An idea, we may say, is the shadow of an object; and that to a savage is another kind of object, but to a dog it is the thing or just nothing at all. The dog has not entered on that process of reflection which perhaps has not led to any very sure result. When his heart, like ours, is baffled and oppressed, and gives matter to his brain it has no strength to cope with, he can neither send his hopes into another world than this, nor

repeat like a charm, and dream that he believes, that appearances may be nothing to a soul which feels them. I do not know the formula which would prove to his mind a satisfactory solution of his practical troubles ; but his system of logic, if he had one, would be simple ; for it would begin, I am sure, and would end with this axiom, "What is smells, and what does not smell is nothing."

§ 21. It would be difficult to detail the steps of the process by which ideas, as such, become objects of knowledge, and with truth and falsehood judgment comes in. And, apart from this difficulty, there is a question of fact which would constantly arise. Given a certain stage of developement, does judgment already exist there or not? It might perhaps be right to connect the distinctions of truth and falsehood in general with the acquisition of language, but it is hard to say where language begins. And, in the stage before language, there are mental phenomena which certainly suggest the effective distinction of sensation and idea.

The provision made beforehand for changes to come can not always be taken as valid evidence. It seems clear that, in many cases, we should be wrong in supposing any knowledge of the future, as opposed to the present. It is certain at least that a presentation, accompanied by or transformed by feelings, is as effective practically as the clearest idea. But in certain animals there are much stronger indications. When artful contrivances, suitable to unseen events, are used in the pursuit of prey, we are led to conclude that the difference of the situation, as it actually is and as it is anticipated, must come before the mind. And, where desire is unsatisfied, it is not always mere feeling as against the object which pervades the soul. The image of the desired, as against present perception, floats or is held before the attention, and the feeling of pain, we may suppose, must sharpen the contrast until at length the difference is seen. And we can mention here what perhaps may be an outward symptom of the change. No one can have been much with domestic animals, and failed to observe their constant and increasing use of the imperative. They *seem* at least to know what they desire, to expect assistance, and to be surprised at non-compliance. And

though mere urgency of feeling, in the absence of ideas, might account for their tone, this interpretation would at times somewhat strain the phenomena.

But, if this is so, then judgment must come before language, and certainly cannot be distinctively human. And, just as after language has been developed, we do often dispense with it; just as the lowest, and perhaps the highest of our thinking, goes on without any words in the mind, so we may suppose, before speech was developed, the *differentia* of judgment already existed.

We are not concerned in the controversy to which this might give rise. If we only know what we mean by judgment, it is little to our purpose where first it appears, and what animal first reaches it. The question is not at all easy to settle, and in passing I will merely suggest a reflection. It is not enough to show that in the mind of an animal an image exists together with a presentation of sense, and that this image, partly the same as the presented, is in collision with it, and again leads to action in relation to the presented. All this may exist, and yet the *differentia* still be absent; the image may not be seen to be mere appearance, to be either not real at all, or less real than the sensation. For, if the image is taken in relation to the perception, they may both be apprehended as one continuous changing fact: the prey may be *seen* as pursued and captured, and the actual object may appear to pass into the desired. And, where failure makes this impossible, what may after all be wanting is the intellectual identification of the image with the object. Apart from this logical process, we have a mere collision in the mind of two realities, whose struggle is felt. We have contest, and perhaps a following ejection; but we have no subjection, no degradation of one fact to the level of an appearance, that exists but in our heads. And in this case judgment would not have taken place.

§ 22. It might be interesting elsewhere to discuss at length these puzzles in psychology, but it will repay us better to pass to what is more certain. It is, in the first place, the *retention* of the false idea which tends to provoke comparison with reality, and which leads the way to the knowledge of appear-

ance and truth and falsehood. And, in the second place, it is language which, if it does not originate, at least ensures and sharpens the contrast. When gregarious animals utter their ideas, the word is in a manner more permanent than the thought, and maintains itself against the fact it tries to express. And the spoken thoughts of the different individuals are sometimes in collision. They are not the same with one another, and therefore not the same with the single fact. And speech in its perversion to lies and deceit makes the dullest comprehend that words and ideas can be and be real, and can yet be illusion and wholly unreal in relation to facts. At this point it is seen that the word and the thought are not like other things. They not only exist but also mean something, and it is their meaning alone which is false or true. They are seen to be symbols, and this insight it is which in the strict sense constitutes judgment.

For in the early stage, to repeat it once more, the image is not a symbol or idea. It is itself a fact, or else the facts eject it. The real, as it appears to us in perception, connects the ideal suggestion with itself, or simply expels it from the world of reality. But judgment is the act which, while it recognizes the idea as appearance, nevertheless goes on to predicate it. It either attributes the idea to reality, and so affirms that it is true, or pronounces it to be merely a bare idea, and that the facts exclude the meaning it suggests. The ideal content which is also fact, and the ideal content which is nothing beyond itself, are truth and falsehood as they appear in judgment.

§ 23. Our object in the foregoing has been, not to chronicle a psychological transition, but to mark out distinctive stages and functions. We must endeavour, in conclusion, to obviate a very fatal mistake. The gulf between the stage of mind that judges and the mind that has not become aware of truth, may seem hard to bridge, and the account we have given may seem to rend facts apart. We may be thought in our extremity, when with natural conditions no progress is possible, to have forced upon the stage a heaven-sent faculty. On one side of your line, we may be told, you possess explicit symbols all of which are universal,

and on the other side you have a mind which consists of mere individual impressions and images, grouped by the laws of a mechanical attraction. The distinction you have made amounts to a divorce. The higher stage can not exist as you describe it, or can not at least be developed from the lower.

In the sequel I shall criticize the whole doctrine of the "Association of ideas," but at present I will say thus much by anticipation. I agree that, if the lower stages of the mind were really what they are in most English psychologies, it never would in any way be possible to pass to the stage where ideas are used in judgment. And this consequence I desire to accentuate and to emphasize. But the fashionable doctrine of "association," in which particular images are recalled by and unite with particular images, is, I think, not true of *any* stage of mind (vid. Book II. Part II. Chap. I.). It does not exist outside our psychology. From the very first beginnings of soul-life universals are used. It is because the results of experience are fixed in an ideal and universal form, that animals are able, I do not say to progress, but to maintain themselves in bare existence.

§ 24. In England I am afraid, the faithful tradition of accumulated prejudice, in which are set the truths of the "Philosophy of Experience," well-nigh makes idle an appeal to the fact. But I will try to state the fact, however idly. It is not true that particular images are ever associated. It is not true that among lower animals universal ideas are never used. What *is* never used is a particular idea, and, as for association, nothing ever is associated without in the process being shorn of particularity. I shall hereafter have to enlarge on the latter statement, and at present will deal with the false assertion, that merely individual ideas are the early furniture of the primitive mind.

In the first place it seems patent that the lower animals have not any idea *about* the individual. To know a thing as the one thing in the world, and as different from all others, is not a simple achievement. If we reflect on the distinctions it implies, we must see that it comes late to the mind. And, on turning to facts, we find that animals of superior intelligence are clearly without it, or give us at least no reason

at all to think that they possess it. The indefinite universal, the vague felt type, which results from past perceptions and modifies present ones, is palpably the process of their intellectual experience. And when young children call all men father, it is the merest distortion of fact to suppose that they perceive their father as individual, and then, perceiving other individuals, confuse a distinction they previously have made.

But this is hardly the real point at issue. To know the individual as such will be admitted to be a late achievement. It can hardly be maintained that a rude intelligence, when it holds a type and rejects what disagrees with it, can be aware of that type as an unique individual. The question is really as to the *use* made of images in early knowledge. Are they *used* as universals, or *used* as particulars?

§ 25. It is agreed on both sides that, as psychical existences, ideas are particular like all other phenomena. The controversy is confined to the use we make of them. I should maintain that, so far as they remain particular, they are simple facts, and not ideas at all; and that, where they are employed to extend or to modify experience, they are never used in their particular form. When A–B is presented in perception, we are told that the result of a past perception B–C appears as particular images *b–c*, and that these images, called up, unite with the presentation. But nothing could be more false. It is not true that all the marks, and relations, and differences, which constitute the particularity of *b* and *c*, appear in the resultant A–B–C, or were in any way used in order to produce it. The image *c*, besides its content as *c*, had the indefinite detail of all psychical phenomena; but it was not this but the universal *c* which was used in A–B–C, and it is the perception A–B that re-particularizes *c* in accordance with itself. And, if this is so, we must say that what really operates is a connection between universal ideas. We have already, in an unconscious form, what, when made explicit, is the meaning of symbols.

I must trust to the sequel for elucidation (vid. Book II. II. Chap. I.), but the subject is so important that I will venture to insert some illustrations. When to-day I reach the place where

yesterday my dog has either chased a cat or fought with an antagonist, the perception as we say "calls up" the ideas, and he runs eagerly forward. His experience, we will suppose, was of a white cat or a black retriever with a large brass collar. To-day images are "called up," not so definite perhaps, but still certainly with some detail, and we will suppose that the detail reproduces the experience. To-day it is a black cat that is found in the place, but with an ordinary dog that will make no difference. The whiteness of the image is quite irrelevant. Or again, if to-day another dog be perceived, if only that dog be not glaringly different, an ordinary dog will certainly attack him, and the less intelligent he is the more catholic is his action. For it is not the whole image but a portion of the content which operates in his mind. He may turn from a small dog or a white dog or a smooth-coated dog, but size, blackness, and roughness, are the typical ideas which will certainly operate. It may be said, no doubt, that the ideas are particular, that they differ from the perception, and that it is the fault of the animal which fails to distinguish them. But why, I reply, does it fail to distinguish? Is a creature intelligent as a terrier unable to see the difference between a white and black cat, or a Newfoundland and a sheep dog? "Yes," I shall be told, "he can if he attends to them, but here, although they both are present,* he does not attend to them." But if so, I must rejoin, if the differences are not used, but remain inoperative, is not this a clear proof that what operates, and what is used, is a portion of the content, which is permanent amid differences, and which later becomes the universal meaning.

Again, if an animal has been burnt one day at the kitchen fire, the next day it may shrink from a lighted match. But

* This is a false assumption as will be shown hereafter. In the first place it is not true that, when the mind goes from A B to C, it has to pass through a particular image *b*. In the next place, if the particular *b* be present, we have no reason to suppose that it will have the qualities of the original perception B. If a white cat has been seen to-day, we saw that next day, if its image is white, the whiteness of that image need not be used; and again if its whiteness was not an object of interest, there is no reason whatever why the image should be white, and not of some other hue. The generalized result left by past experience is always mutilated.

how different are the two. How much more unlike than like. Will you say then that the match can not operate unless it first summons up, and then is confused with the image of a kitchen fire; or will you not rather say that a connection between elements, which are none of them particular, is produced in the mind by the first experience? But, if so, from the outset universals are used, and the difference between the fact and the idea, the existence and the meaning, is unconsciously active in the undeveloped intelligence.

§ 26. We must anticipate no further. In another place we shall show the fictitious nature of the "Laws of Association," as they have been handed down by our prevalent tradition. Our object here has been, in passing, to show that the symbolic use of ideas in judgment, although no early process of the mind, is a natural result of mental developement. From the very first beginnings of intelligence it is the type that operates and not the image. The instance as such is never, and can never be, retained in the soul. The connection of certain elements in its content is all it leaves behind. You may call it, if you please, mere impotence of our imagination, or you may call it that idealizing function of the mind which is the essence of intelligence, still the fact remains that never at any stage can any fact be retained without some mutilation, some removal of that detail which makes it particular. The lower we descend in the growth of our own functions, or in the scale of animate nature, the more typical, the less individual, the less distinct, the more vaguely universal and widely symbolic is the deposit of experience. It is not symbolic in the sense that the meaning is at first perceived to be other than the fact. It is not universal in the sense that analysis has distinguished the relevant from the irrelevant detail, and found elements more simple, and syntheses wider than are suggested by mere sense. But in the sense of not using the particular as particular, and of taking the meaning while leaving the existence, in the sense of invariably transcending the given, and of holding true always and valid everywhere what has ever and anywhere once been experienced, the earliest and the latest intelligence are the same from one end to the other of the scale of life.

CHAPTER II.

THE CATEGORICAL AND HYPOTHETICAL FORMS OF JUDGMENT.

§ 1. In the foregoing chapter we have attempted roughly to settle the main characteristics of judgment. The present chapter will both support and deepen our conclusion. It will deal with problems, in part familiar to those who have encountered the well-known discussion aroused by Herbart. The length and the difficulty of this second chapter may perhaps be little warranted by success, but I must be allowed to state beforehand that both are well warranted by the importance of the subject in modern logic.

A judgment, we assume naturally, says something about some fact or reality. If we asserted or denied about anything else, our judgment would seem to be a frivolous pretence. We not only must say something, but it must also be about something actual that we say it. For consider; a judgment must be true or false, and its truth or falsehood cannot lie in itself. They involve a reference to a something beyond. And this, about which or of which we judge, if it is not fact, what else can it be?

The consciousness of objectivity or necessary connection, in which the essence of judgment is sometimes taken to lie, will be found in the end to derive its meaning from a reference to the real. A truth is not necessary unless in some way it is compelled to be true (vid. Chap. VII.). And compulsion is not possible without something that compels. It will hence be the real, which exerts this force, of which the judgment is asserted. We may indeed not affirm that the suggestion S–P itself is categorically true of the fact, and *that* is not our judgment. The actual judgment asserts that S–P is forced

on our minds by a reality x. And this reality, whatever it may be, is the subject of the judgment. It is the same with objectivity. If the connection S–P holds outside my judgment, it can hardly hold nowhere or in nothingness. It must surely be valid in relation to something, and that something must be real. No doubt, as before, S–P may not be true directly of this fact; but then that again was not what we asserted. The actual judgment affirms that S–P is in connection with x. And this once again is an assertion about fact.

There is a natural presumption that truth, to be true, must be true of reality. And this result, that comes as soon as we reflect, will be the goal we shall attain in this chapter. But we shall reach it with a struggle, distressed by subtleties, and perhaps in some points disillusioned and shaken.

§ 2. Less serious difficulties we may deal with at once. "A four-cornered circle is an impossibility," we are told, does not assert the actual existence of a four-cornered circle (Herbart, I. 93). But the objection is irrelevant, unless it is maintained that in every case we affirm the reality of the *grammatical* subject.* And this clearly is not always what we mean to assert. And such further examples as "There are no ghosts," or "This thought is an illusion," may be likewise disposed of. It is not the first form and haphazard conjunction of every proposition which represents reality. But, in every proposition, an analysis of the meaning will find a reality of which something else is affirmed or denied. "The nature of space excludes the connection of square and round," "The world is no place where ghosts exist," "I have an idea, but the reality it refers to is other than its meaning,"—we may offer these translations as preliminary answers to a first form of attack. And when Herbart assails us with "The wrath of the Homeric gods is fearful" (I. 99), we need give no ground before such a weapon. In Homer it *is* so; and surely a poem, surely any imagination, surely dreams and delusions, and surely much more our words and our names are all of them facts of a certain kind. Such plain distinctions as those between existences of different orders should never have been confused,

* Ueberweg seems to make this mistake, *Logik*, § 68.

and the paradox lies on the side of those who urge such an objection.*

And if, further, the discussion take the misleading form of an enquiry into the copula, we find merely the same misunderstandings unknowingly reproduced. Wherever we predicate, we predicate about something which exists beyond the judgment, and which (of whatever kind it may be) is real, either inside our heads or outside them. And in this way we must say that "is" never can stand for anything but "exists."†

§ 3. But Herbart, we shall find, is not so easily disposed of. He was not the man first uncritically to swallow the common-sense doctrine that judgment is of things, and then to stagger at the discovery that things are not words, or fall prostrate before a supposed linguistic revelation of the nature of the copula. In denying that judgment asserts a fact, he knew well what he stood on. It was no puzzle about the grammatical subject, but a difficulty as to the whole nature of truth and of ideas. We reflect about judgment, and, at first of course, we think we understand it. Our conviction is that it is concerned with fact; but we also see that it is concerned with ideas. And the matter seems at this stage quite simple. We have a junction or synthesis of ideas in the mind, and this junction expresses a similar junction of facts outside. Truth and fact are thus given to us together, the same thing, so to speak, in different hemispheres or diverse elements.

* I admit that there are difficulties which for the moment we ignore. When no one reads Homer, of what subject can we predicate the wrath of his deities? Though the meaning of a term is a fact, most certain and quite undeniable, yet where is that fixed connection to be found? Does it lie in the dictionaries when no one opens them, or in the usage when no one is employing the word? But these questions bear as hardly on fact as on legend, and on things as on names. Mathematical truths at the least hold good inside mathematics. But where are mathematics? And we all believe that arsenic poisons, but if at the moment no dose is operating, nor any one in the world is thinking of arsenic, it poisons nothing. We shall hereafter return to the discussion of this problem.

† The reader may consult Jordan. *Die Zweideutigkeit des Copula bei Stuart Mill*, Gymn. Prog. Stuttgart, 1870; Brentano, *Psychologie*, Buch ii. Cap. 7. On the other side see Drobisch. *Logik*, §§ 55–6; Sigwart, *Logik*, I. 94.

But a further reflection tends to dissipate our confidence. Judgments, we find, are the union of ideas, and truth is not found except in judgments. How then are ideas related to realities? They seemed the same, but they clearly are not so, and their difference threatens to become a discrepancy. A fact is individual, an idea is universal; a fact is substantial, an idea is adjectival; a fact is self-existent, an idea is symbolical. Is it not then manifest that ideas are *not* joined in the way in which facts are? Nay the essence of an idea, the more it is considered, is seen more and more to diverge from reality. And we are confronted by the conclusion that, so far as anything is true, it is *not* fact, and, so far as it is fact, it can never be true. Or the same result may have a different form. A categorical judgment makes a real assertion in which some fact is affirmed or denied. But, since no judgment can do this, they all in the end are hypothetical. They are true only of and upon a supposition. In asserting S–P I do not mean that S, or P, or their synthesis, is real. I say nothing about any union in fact. The truth of S–P means that, *if I suppose* S, I am bound *in that case* to assert S–P. In this way *all* judgments are hypothetical.*

The conclusion, thus urged upon us by Herbart, follows, I think, irresistibly from the premises. But the premises are not valid. Judgment, we saw in the foregoing chapter, can not consist in the synthesis of ideas. And yet it will repay us to pause awhile, and to enlarge on the consequences of this erroneous doctrine. To see clearly that, if judgment is the union of ideas, there then can be no categorical judgment, is a very great step in the understanding of Logic. And, through the next few sections, we shall endeavour to make this conclusion plain.

§ 4. The contrast and comparison of reality and truth no doubt involve very ultimate principles. To enquire what is fact, is to enter at once on a journey into metaphysics, the end of which might not soon be attained. For our present purpose we must answer the question from a level not much above that of common sense. And the account which repre-

* Herbart, *Werke*, I. 92. He refers here to Wolff, by whom, in this point he had been partially anticipated. Cf. Fichte, *Werke*, I. 69. 93.

sents the ordinary view, and in which perhaps we may most of us agree, is something of this sort.

The real is that which is known in presentation or intuitive knowledge. It is what we encounter in feeling or perception. Again it is that which appears in the series of events that occur in space and time. It is that once more which resists our wills: a thing is real, if it exercises any kind of force or compulsion, or exhibits necessity. It is briefly what acts and maintains itself in existence. And this last feature seems connected with former ones. We know of no action, unless it shows itself by altering the series of either space or time, or both together; and again perhaps there is nothing which appears unless it acts. But the simplest account, in which the others possibly are all summed up, is given in the words, The real is self-existent. And we may put this otherwise by saying, The real is what is individual.

It is the business of metaphysics to subject these ideas to a systematic examination. We must content ourselves here with taking them on trust, and will pause merely to point out a common misunderstanding. It is a mistake to suppose that "The real is individual" means either that the real is abstractly simple, or is merely particular. Internal diversity does not exclude individuality, and still less is a thing made self-existent by standing in a relation of exclusion to others. Metaphysics can prove that, in this sense, the particular is furthest removed from self-existence. The individual is so far from being merely particular that, in contrast with its own internal diversity, it is a true universal (cf. Chap. VI.). Nor is this a paradox. We are accustomed to speak of, and believe in, realities which exist in more than one moment of time or portion of space. Any such reality would be an identity which appears and remains the same under differences; and it therefore would be a real universal.*

§ 5. Such, we may say, are some of the points which

* The following reflection may interest the reader. If space and time are continuous, and if all appearance must occupy some time or space—and it is not hard to support both these *theses*—we can at once proceed to the conclusion, no mere particular exists. Every phenomenon will exist in more times or spaces than one; and against that diversity will be itself an universal.

constitute reality. And truth has not one of them. It exists, as such, in the world of ideas. And ideas, we have seen, are merely symbols. They are general and adjectival, not substantive and individual. Their essence lies within their meaning and beyond their existence. The idea is the fact with its existence disregarded, and its content mutilated. It is but a portion of the actual content cut off from its reality, and used with a reference to something else. No idea can be real.

If judgment is the synthesis of two ideas, then truth consists in the junction of unreals. When I say, Gold is yellow, then certainly some fact is present to my mind. But universal gold and universal yellowness are not realities, and, on the other hand, what *images* of yellow and gold I actually possess, though as psychical facts they have real existence, are unfortunately not the facts about which I desired to say anything. We have seen (Chap. I.) that I do *not* mean, This image of gold is in my mind joined psychically with this other image of yellow. I mean that, quite apart from my mental facts, gold in general has a certain kind of colour. I strip away certain parts from the mental facts, and, combining these adjectival remnants, I call the synthesis truth.

But reality is not a connection of adjectives, nor can it so be represented. Its essence is to be substantial and individual. But can we reach self-existence and individual character by manipulating adjectives and putting universals together? If not, the fact is not given *directly* in any truth whatsoever. It can never be stated categorically. And yet, because adjectives depend upon substantives, the substantive is implied. Truth will then refer to fact *indirectly*. The adjectives of truth presuppose a reality, and in this sense all judgment will rest on a supposal. It is all hypothetical: itself will confess that what directly it deals with, is unreal.

§ 6. More ordinary considerations might perhaps have led us to anticipate this result. The common-sense view of facts outside us passing over into the form of truth within us, or copying themselves in a faithful mirror, is shaken and perplexed by the simplest enquiries. What fact is asserted in negative judgments? Has every negation I choose to invent a real counterpart in the world of things? Does *any* logical

negation, as such, correspond to fact? Consider again hypothetical judgments. *If* something is, *then* something else follows, but should neither exist, would the statement be false? It seems just as true without facts as with them, and, if so, what fact can it possibly assert? The disjunctive judgment will again perplex us. "A is *b* or *c*" must be true or false, but how in the world can a *fact* exist as that strange ambiguity "*b* or *c*?" We shall hardly find the flesh and blood alternative which answers to our "or."

If we think these puzzles too technical or sought out, let us take more obvious ones. Have the past and the future we talk of so freely any real existence? Or let us try a mere ordinary categorical affirmative judgment, "Animals are mortal." This seems at first to keep close to reality: the junction of facts seems quite the same as the junction of ideas. But the experience we have gained may warn us that, if ideas are adjectives, this can not be the case. If we are unconvinced, let us go on to examine. "Animals" seems perhaps to answer to a fact, since all the animals who exist are real. But in "Animals are mortal," is it only the animals now existing that we speak of? Do we not mean to say that the animal born hereafter will certainly die? The complete collection of real things is of course the same fact as the real things themselves, but a difficulty arises as to future individuals. And, apart from that, we scarcely in general have in our minds a complete collection. We *mean*, "Whatever is an animal will die," but that is the same as *If* anything is an animal *then* it is mortal. The assertion really is about mere hypothesis; it is not about fact.

In universal judgments we may sometimes understand that the synthesis of adjectives, which the judgment expresses, is really found in actual existence. But the judgment does not say this. It is merely a private supposition of our own. It arises partly from the nature of the case, and partly again from our bad logical tradition. The fact that most adjectives we conjoin in judgment can be taken as the adjectives of existing things, leads us naturally to expect that this will always be the case. And, in the second place, a constant ambiguity arises from the use of "all" in the subject. We

write the universal in the form "All animals," and then take it to mean each actual animal, or the real sum of existing animals. But this would be no more an universal judgment than "A B and C, are severally mortal." And we *mean* nothing like this. In saying "All animals," if we think of a collection, we never for a moment imagine it complete; we mean also "Whatever besides may be animal must be mortal too." In universal judgments we never mean "all." What we mean is "any," and "whatever," and "whenever." But these involve "if."

We may see this most easily by a simple observation. If actual existence were really asserted, the judgment would be false if the existence failed. And this is not the case. It would be a hazardous assertion that, supposing all animal life had ceased, mortality would at once be predicated falsely, and, with the re-appearance of animal existence, would again become true. But cases exist where no doubt is possible. "All persons found trespassing on this ground will be prosecuted," is too often a prophecy, as well as a promise. But it is not meant to foretell, and, though no one trespasses, the statement may be true. "All triangles have their angles equal to two right angles" would hardly be false if there were no triangles. And, if this seems strange, take the case of a chiliagon. Would statements about chiliagons cease to be true, if no one at the moment were thinking of a chiliagon? We can hardly say that, and yet where would any chiliagons exist? There surely must be scientific propositions, which unite ideas not demonstrable at the moment in actual existence. But can we maintain that, if the sciences which produce these became non-existent, these judgments would have *ipso facto* become false, as well as unreal?

The universal judgment is thus always hypothetical. It says "*Given* one thing you will *then* have another," and it says no more. No truth can state fact.

§ 7. This result is however not easy to put up with. For, if the truth is such, then all truths, it would seem, are no better than false. We can not so give up the categorical judgment, for, if that is lost, then everything fails. Let us make a search and keep to this question, Is there nowhere to

be found a categorical judgment? And it seems we can find one. Universal judgments were merely hypothetical, because they stated, not individual substantives, but connections of adjectives. But in singular judgments the case is otherwise. Where the subject, of which you affirm categorically, is one individual, or a set of individuals, your truth expresses fact. There is here no mere adjective and no hypothesis.

These judgments are divisible into three great classes. And the distinction will hereafter be of great importance. (i) We have first those judgments which make an assertion about that which I now perceive, or feel, or about some portion of it. "I have a toothache," "There is a wolf," "That bough is broken." In these we simply analyze the given, and may therefore call them by the name of *Analytic judgments of sense.** Then (ii) we have *Synthetic judgments of sense,* which state either some fact of time or space, or again some quality of the matter given, which I do not here and now directly perceive. "This road leads to London," "Yesterday it rained," "To-morrow there will be full moon." They are synthetic because they extend the given through an ideal construction, and they all, as we shall see, involve an inference. The third class (iii), on the other hand, have to do with a reality which is never a sensible event in time. "God is a spirit," "The soul is a substance." We may think what we like of the validity of these judgments, and may or may not decline to recognize them in metaphysics. But in logic they certainly must have a place.

§ 8. But, if judgment is the union of two ideas, we have not so escaped. And this is a point we should clearly recognize. Ideas are universal, and, no matter what it is that we try to say and dimly mean, what we really express and succeed in asserting, is nothing individual. For take the analytic judgment of sense. The fact given us is singular, it is quite unique; but our terms are all general, and state a truth which may apply as well to many other cases. In "I have a toothache" both the I and the toothache are mere

* These analytic and synthetic judgments must not for one moment be confounded with Kant's. Every possible judgment, we shall see hereafter, is both analytic and synthetic. Most, if not all, judgments of sense are synthetic in the sense of transcending the given.

generalities. The *actual* toothache is not any other toothache, and the *actual* I is myself as having this very toothache. But the truth I assert has been and will be true of all other toothaches of my altering self. Nay "I have a toothache," is as true of another's toothache as of my own, and may be met by the assertion, "Not so but *I* have one." It is in vain that we add to the original assertion "this," "here," and "now," for they are all universals. They are symbols whose meaning extends to and covers innumerable instances.

Thus the judgment will be true of any case whatsoever of a certain sort; but, if so, it can not be true of the reality; for that is unique, and is a fact not a sort. "That bough is broken," but so are many others, and we do not say which. "This road leads to London" may be said just as well of a hundred other roads. "To-morrow it will be full moon," does not tell us what to-morrow. Hereafter it will constantly be true that, on the day after this day, there will be a full moon. And so, failing in all cases to state the actual fact, we state something else instead. What is true of all does not express this one. The assertion sticks for ever in the adjectives; it does not reach the substantive. And adjectives unsupported float in the air: their junction with reality is supposed and not asserted. So long as judgments are confined to ideas, their reference to fact is a mere implication. It is presupposed outside the assertion, which is not strictly true until we qualify it by a suppressed condition. As it stands, it both fails as a singular proposition, and is false if you take it as a strict universal (*cf.* § 62 foll.).

§ 9. But judgment, as we saw in the foregoing Chapter, is not confined to ideas, and can not by any means consist in their synthesis. The necessity for two ideas is a mere delusion, and, if before we judged we had had to wait for them, we certainly should never have judged at all. And the necessity for the copula is a sheer superstition. Judgments can exist without any copula and with but one idea.

In the simplest judgment an idea is referred to what is given in perception, and it is identified therewith as one of its adjectives. There is no need for an idea to appear as the subject, and, even when it so appears, we must distinguish the

fact from grammatical show. It is present reality which is the actual subject, and the genuine substantive of the ideal content. We shall see hereafter that, when "this" "here" and "now" seem to stand as subjects, the actual fact which appears in perception is the real subject, to which these phrases serve to direct our attention. But of this in the sequel; we have seen already, and have further to see, that all judgments predicate their ideal content as an attribute of the real which appears in presentation.

It is from this point of view that we must resume the discussion. Standing on this basis, we must examine afresh the various judgments which have passed before us, and must ask for their meaning and further validity. Some difficulties in our search for categorical judgments may have already disappeared; but others as formidable must perhaps be awaited. And, if we come to the result that all truth in the end is true of reality, we must not expect to maintain that doctrine in its crude acceptation.

§ 10. Our first movement however must be towards a definition. A phrase we have used was designedly ambiguous. Are we to hold that the real, which is the ultimate subject, and which, as we said, appears in perception, is identical with the merely momentary appearance? We shall see that this can not be, and that such a view could not possibly account for the facts. At present we may offer a preliminary argument against this mistake.

The subject which appears in the series of time, and to which we attribute our ideas as predicates, must itself be real. And, if real, it must not be purely adjectival. On the contrary it must be self-existent and individual. But the particular phenomenon, the momentary appearance, is not individual, and is so not the subject which we use in judgment.

§ 11. We naturally think that the real, at least as we know it, must be present. Unless I come into contact with it directly, I can never be sure of it. Nothing in the end but what I feel can be real, and I can not feel anything unless it touches me. But nothing again can immediately encounter

me save that which is present. If I have it not here and now, I do not have it at all.

"The present is real;" this seems indubitable. And are we to say that the momentary appearance is *therefore* real? This indeed would be mistaken. If we take the real as that which is confined to a single "here" or a single "now" (in this sense making it particular), we shall have questions on our hands we shall fail to dispose of. For, beside the difficulties as to the truth of all universal judgments, we are threatened with the loss of every proposition which extends beyond the single instant. *Synthetic* judgments must at once be banished if the real is only the phenomenon of a moment. Nothing either past or future in time, nor any space I do not directly perceive, can be predicated as adjectives of our one "now" and "here." All such judgments would be false, for they would attribute to the existent qualities which confessedly are non-existent, or would place the real as one member in a series of utter unrealities.

But perhaps we feel we may escape this consequence; or at all events feel so sure of our premise that we can not give it up. "The real is confined to one here or one now." But supposing this true, are we sure we know what it is we understand by our "now" and "here"? For time and extension seem continuous elements: the here is one space with the other heres round it; and the now flows ceaselessly and passes for ever from the present to the past.

We may avoid this difficulty, we may isolate the time we call the present, and fix our now as the moment which *is*, and has neither past, nor future, nor transition in itself. But here we fall into a hopeless dilemma. This moment which we take either has no duration, and in that case it turns out no time at all: or, if it has duration, it is a part of time, and is found to have transition in itself.

If the now in which the real appears is purely discrete, then first we may say that, as characterized by exclusion, the phenomenon, if apparent, is not self-subsistent, and so not real. But apart from that objection, and to return to our dilemma, the now and the here must have some extension. For no part of space or time is a final element. We find that every here

is made up of heres, and every now is resolvable into nows. And thus the appearance of an atomic now could not show itself as any one part of time. But, if so, it could never show itself at all. Or, on the other hand, if we say the appearance has duration, then, like all real time, it has succession in itself, and it would not be the appearance of our single now.* From all which it is clear that a momentary appearance will not give us the subject of which we are in search.

§ 12. It is a mistake to suppose that the present is a part of time, indivisible and stationary, and that here and now can be solid and atomic. In one sense of the word the present is no time. Itself no part of the process, it is a point we take within the flow of change. It is the line that we draw across the stream, to fix in our minds the relations of one successive event to another event. "Now," in this sense, stands for "simultaneous with:" it signifies not existence but bare position in the series of time. The reality is not present in the sense of given in one atomic moment.

What we mean, when we identify presence with reality, is something different. The real is that with which I come into immediate contact, and the content of any part of time, any section of the continuous flow of change, is present to me if I directly encounter it. What is given in a perception, though it change in my hands, is now and here if only I perceive it. And within that perception any aspect or part, which I specially attend to, is specially present, is now and here in another sense than the rest of that content. The present is the filling of that duration in which the reality appears to me

* It is the business of metaphysics to prove these points at length. If time consists of discrete parts, it is hard to see how the fact of succession can possibly be explained, unless time be taken between these parts of time. And that would lead to untenable conclusions. But it is the fact of change which shows that time is continuous. The rate of change, the number of events in every part of time, may, so far as we know, be increased indefinitely: and this means that in every part of time more than one event may take place. If the parts be discrete, then not only will motion imply that a thing is in several places in one time (and this is a fact), but also (which is absurd) that throughout all these places no time elapses, that they are strictly contemporaneous. I should be glad to enter into the discussion at length, but the subject cannot properly be treated by logic.

directly: and there can be no part of the succession of events so small or so great, that conceivably it might not appear as present.

In passing we may repeat and may trace the connection of those shades of meaning we have found in "presence." (i) Two events in time are now to one another, if both are given simultaneously in *my* series. (ii) Since the real appears in the series of time, the effort to find it both *present* and *existing* within that series, creates the fiction of the atomic now. (iii) If the real can never exist *in* time, but only appear there, then that part of the series in which it touches me is my present. (iv) And this suggests the reflection that presence is really the negation of time, and never can properly be given in the series. It is not the time that can ever be present, but only the content.

§ 13. But we must leave these intricacies. We must be satisfied with knowing that the real, which (we say) appears in perception, does not appear in one single moment. And if we will pause and reflect for a little, we shall see how hardened we are in superstitions. When we ask for reality, we at once encounter it in space and time. We find opposed to us a continuous element of perpetual change. We begin to observe and to make distinctions, and this element becomes a series of events. And here we are tempted to deceive ourselves grossly. We allow ourselves to talk as if there existed an actual chain of real events, and as if this chain were somehow moved past us, or we moved along it, and as if, whenever we came to a link, the machinery stopped and we welcomed each new link with our "here" and our "now." Still we do not believe that the rest of the links, which are *not* here and now, do all equally exist, and, if so, we can hardly be quite sure of our chain. And the link, if we must call it so, which is now and here, is no solid substance. If we would but observe it, we should see it itself to be a fluid sequence whose parts offer no resistance to division, and which is both now, and itself without end made up of nows.

Or we seem to think that we sit in a boat, and are carried down the stream of time, and that on the bank there is a row of houses with numbers on the doors. And we get out of the

boat, and knock at the door of number 19, and, re-entering the boat, then suddenly find ourselves opposite 20, and having there done the same, we go on to 21. And, all this while, the firm fixed row of the past and future stretches in a block behind us and before us.

If it really is necessary to have some image, perhaps the following may save us from worse. Let us fancy ourselves in total darkness hung over a stream and looking down on it. The stream has no banks, and its current is covered and filled continuously with floating things. Right under our faces is a bright illuminated spot on the water, which ceaselessly widens and narrows its area, and shows us what passes away on the current. And this spot that is light is our now, our present.

We may go still further and anticipate a little. We have not only an illuminated place, and the rest of the stream in total darkness. There is a paler light which, both up and down stream, is shed on what comes before and after our now. And this paler light is the offspring of the present. Behind our heads there is something perhaps which reflects the rays from the lit-up now, and throws them more dimly upon past and future. Outside this reflection is utter darkness; within it is gradual increase of brightness, until we reach the illumination immediately below us.

In this image we shall mark two things, if we are wise. It is possible, in the first place, that the light of the present may come from behind us, and what reflects the light may also bestow it. We can not tell that, but what we know is, that our now is the source of the light that falls on the past and future. Through it alone do we know there exists a stream of floating things, and without its reflection past and future would vanish. And there is another point we must not lose sight of. There is a difference between the brightness of the now, and the paler revelation of past and future. But, despite this difference, we see the stream and what floats in it as one. We overcome the difference. And we do so by seeing the continuity of the element in past present and future. It is because, through the different illuminations, there are points of connection offered by what floats, in other words, a sameness of content, that the stream and its freightage becomes all

one thing to us, and we even forget that most of what we see is not self-subsistent but borrowed and adjectival. We shall perceive hereafter that time and space beyond here and now are not strictly existent in the sense in which the present is. They are not given directly but are inferred from the present. And they are so inferred because the now and here, on which the light falls, are the appearance of a reality which for ever transcends them, and, resting upon which, we go beyond them.

§ 14. But this is to anticipate. The result, which at present we have wished to make clear, is that the now and here, in which the real appears, are not confined within simply discrete and resting moments. They are any portion of that continuous content with which we come into direct relation. Examination shows that not only at their edges they dissolve themselves over into there and then, but that, even within their limits as first given, they know no repose. Within the here is both here and there; and in the ceaseless process of change in time you may narrow your scrutiny to the smallest focus, but you will find no rest. The appearance is always a process of disappearing, and the duration of the process which we call our present has no fixed length.

It will be seen hereafter that in the above reflections we have not been wandering. Nor will it be long before we return to them, but we must now rediscuss from a better point of view those forms of judgment we before laid down (§ 7).

§ 15. Judgment is not the synthesis of ideas, but the reference of ideal content to reality. From this basis we must now endeavour to interpret the various kinds of judgment we have met with. And, beginning with the singular judgments of § 7, let us take the first division of these, which were called Analytic judgments of sense.

I. The essence of these is to hold only of the now, and not to transcend the given presentation. They may have neither grammatical subject nor copula, or again, on the other hand, may possess one or both.

A. In the judgments that have neither copula nor subject,

an idea is referred (*a*) to the whole sensible reality, or (*β*) to some one part of it.

(*a*) When we hear the cry of "Wolf," or "Fire," or "Rain," it is impossible to say that we hear no assertion. He who raises the cry is always taken to affirm, to have uttered a sign and to have used it of the real. The practical man would laugh at your distinction that, in exclaiming "Wolf," I can not be a liar, because I use no subject or copula, but that, if I go so far as "This is a wolf," I am thereby committed. Such a plea, we must allow, would be instantly dismissed. In the "Wolf" or "Rain" the subject is the unspecified present environment, and that is qualified by the attribution of the ideal content "Wolf" or "Rain." It is the *external* present that is here the subject. But in some moment of both outward squalor and inward wretchedness, where we turn to one another with the one word "miserable," the subject is here the whole given reality.

Such single words, it may perhaps be said, are really interjections and never predicates. If they were really interjections, we must stubbornly maintain, they could not be the vehicle of truth and falsehood. And a real interjection that is nothing besides, is not so common as some persons suppose. An *habitual* interjection soon gets a meaning, and becomes the sign of a received idea, which, in reference to the content, may be an assertion of truth or falsehood.

But the fact is really beyond all question. You may utter a word which conveys to you, and which you know conveys to others also, a statement about fact. Unless then you are deceiving, you must be judging. And you certainly are judging without any other subject than the whole sensible present.

(*β*) But this is an extreme case: in nearly all instances but one piece of the present is the real subject. We qualify by our idea some one given aspect. But no subject or copula appears even here. A common understanding, or the pointing of a finger, is all that serves to limit the reference. Of a visible wolf I may predicate the words "asleep" or "running," or in watching a sunset, it is enough for me to say the word

"down" or "gone," and every one knows I am judging and affirming. It might be said, no doubt, that the subject is elided, but this would be a mere linguistic prejudice. The genuine subject is not an idea, elided or expressed, but it is the immediate sensible presentation.*

And again it might be said that what we call the predicate is really the subject of an unexpressed existential judgment. But this cardinal mistake will be soon disposed of, when hereafter we deal with that class of judgments (§ 42).

§ 15. B. We pass next to those analytic judgments where a subject is expressed. The ideal content of the predicate is here referred to another idea, which stands as a subject. But in this case, as above, the ultimate subject is no idea, but is the real in presentation. It is this to which the content of both ideas, with their relation, is attributed. The synthesis of the ideal elements is predicated either (*α*) of the whole, or (*β*) of a part, of that which appears.

(*α*) In such judgments as "Now is the time," "It's all so dreary," or "The present is dark," an idea takes the place of the unspoken reference of the preceding section. But the subject remains in both cases the same. An idea, it is true, intervenes beween the reality and the predicate, and holds the place of immediate subject. But a moment's consideration will assure us that the subject of our assertion is still the presented. The immediate subject is the sign of a reference, either simple or embodying implications, to the whole given reality.

(*β*) We have a further advance when the presented fact is not the whole sensible environment, but only a part of it. In "There is a wolf," "This is a bird," or "Here is a fire," "there" "this" and "here" are certainly ideas, and stand no doubt for the subject of the judgment:† but, the moment we examine them, we find once more a reference to the reality, not now indefinite and embracing the whole, but still no more

* For a further explanation, vid. Chap. III. § 2.

† It sounds, perhaps, rather shocking to call "there" or "here" subjects, but, if the text is understood, I need make no defence. On the nature of the ideas of "this," "now," and "here," we shall find later on a good deal to say.

than a sign of distinction and indication. If these ideas are the true subject of a judgment, then so is a silent pointing with the finger.

§ 16. There is really no change when we go a step further, and take such judgments as "This bird is yellow," "That stone is falling," "This leaf is dead." The idea, which stands as the grammatical subject, is certainly more than an indefinite reference, more even than a sign of indication. It not only distinguishes a part from the environment, but it also characterizes and qualifies it. But if, before, the subject we *meant* was not an idea, but was presented fact, so also now does this remain the truth. It is not the bare idea, symbolized by "this bird," of which we go on to affirm the predicate. It is the fact distinguished and qualified by "this bird," to which the adjective "yellow" is really attributed. The genuine subject is the thing as perceived, the content of which our analysis has divided into "this bird" and "yellow," and of which we predicate indirectly those ideal elements in their union.

The same account holds throughout all the variety of these analytic judgments. Let us complicate our assertion. "The cow, which is now being milked by the milk-maid, is standing to the right of the hawthorn tree yonder." In this judgment we have not one thing but several, and more than one statement about their relations. But it is still a part of the presented environment which is actually the subject and the real substantive of which this whole complex is indirectly asserted. If you deny this, then show me where you draw your line, and what point it is in the scale of judgments at which the idea takes the place of the sensible fact, and becomes the true subject. And confine the assertion to mere ideas. Take the ideal elements of a cow and a hawthorn tree and a milk-maid, and combine them ideally in any way you please. Then after they are combined, stand in presence of the fact, and ask yourself if *that* does not enter into your judgment. If, with the fact before you, you begin to reflect, you will find that, if you keep to mere ideas, you remove from the assertion just the thing you mean. In § 20 we shall return to this point, but at present we may deal with a popular error.

§ 17. There is a curious illusion, now widely spread, on

the subject of proper names. We find it laid down that a proper name has not got *connotation*, or, to use the more common technical term, it has no *intension*. In ordinary language, it *stands* for something but does not *mean* anything.

If this were true, it would be hard to understand what is signified by such judgments as "John is asleep." There are thinkers indeed, who fear no consequence, and who will tell us that here the *name* John is the subject of the proposition. And against these adversaries I confess I have no heart to enter the lists. They may say what they please without hindrance from me. But, if we are inclined to accept a less heroic solution, and to suppose the *man* John to be the subject of the judgment, then I do not quite see the purpose of the name, if we are not to mean by it anything at all. Why not simply omit it, and, pointing to the man, say the word "asleep"?

"But it stands for the man," I shall hear the reply, "and, even when he is present, it is a *mark* which serves to distinguish him much more clearly than pointing." But that is just what puzzles me. If there *is* an idea conveyed by the name, whenever it is used, then it surely means something, or, in the language which pleases you, it must be "connotative." But if, on the other hand, it conveys *no* idea, it would appear to be some kind of interjection. If you say that, like "this" and "here," it is merely the ideal equivalent of pointing, then at once it assuredly *has* a meaning, but unfortunately that meaning is a vague universal. For anything and everything is "this" and "here." But if you asseverate that it is the ideal counterpart of pointing in particular to John, then you must allow me to doubt if you comprehend what you are saying.

The word "mark" has two senses which perhaps we may confuse. It is something which *may be* made a means of distinction, or something which *has been* made such a means. I suppose, for I can do no more than suppose, that mark is not taken in the former sense, and that our man was not seen to be distinct from other men, because he was found to have the marking John. But, if it is the latter of these senses we adopt, then a name is a mark because it is a sign, and mark and sign are here identical.

Now a sign can not possibly be destitute of meaning.

Originally imposed as an *arbitrary* mark, that very process, which makes it a sign and associates it firmly with the thing it signifies, must associate with it also some qualities and characters of that which it stands for. If it did not to some extent get to *mean* the thing, it never could get to *stand* for it at all. And can any one say that a proper name, if you are aware of its designation, brings *no* ideas with it, or that these ideas are mere chance conjunction? What connection, I would ask, would be left between the bare name and the thing it stands for, if every one of these ideas were removed? All would vanish together.

The matter is so plain I do not know how to explain it. The meaning of a sign need of course not be fixed. But is the thing it stands for quite invariable? If the "connotation" is unsteady, does the "denotation" never change? But where the latter is fixed there the former on its side (within limits) is stationary. You may have no idea what "William" connotes, but if so you can hardly know what it stands for. The whole question arises from a simple mistake and misunderstanding.

§ 18. "But after all the name is the sign of an individual, and meanings are generic and universal. Therefore the name can not have any content of which it is the sign." I have purposely put an objection in that form which suggests the conclusion I wish to arrive at. The name of a man is the name of an individual, which remains amid changing particulars, and therefore no judgment about such an individual is wholly analytic. It transcends the given, it becomes synthetic, and with it we pass into the second great division of singular judgments.

Proper names have a meaning which always goes beyond the presentation of the moment. It is not indeed true that such names must stand for objects, which endure through a train of altering perceptions. The unique thing they designate may appear but once, as an event shut up within one presentation. But that object would not be unique, nor proper to its own especial self, if it did not involve a reference to a series from which it was excluded. And mere analysis of sense could never suggest that limiting relation which gives it uniqueness.

And, when we take the proper names of objects which last and which reappear, then the given is transcended in a still higher sense. The meaning of such a name is universal, and its use implies a real universality, an identity which transcends particular moments. For, unless the person were recognized as distinct, he would hardly get a name of his own, and his recognition depends on his remaining the same throughout change of context. We could not recognize anything unless it possessed an attribute, or attributes, which from time to time we are able to identify. The individual remains the same amid that change of appearance which we predicate as its quality. And this implies that it has real identity. Its proper name is the sign of a universal, of an ideal content which actually *is* in the real world.

This assumption, and the practice of giving proper names, may no doubt be indefensible. What concerns us here is that the practice transcends presented reality. In "John is asleep," the ultimate subject can not be the real as it is now given; for "John" implies a continuous existence, not got by mere analysis. We have reached the class of synthetic judgments.

§ 19. II. In this second class of singular judgments (§ 7), we make generally some assertion about that which appears in a space or time that we do not perceive, and we predicate of a presentation something not got by analysis of its content. If I say "There is a garden on the other side of that wall," the judgment is synthetic, for it goes beyond perception. And in "Yesterday was Sunday," "William conquered England," "Next month is June," I certainly do not analyze what is merely given. In synthetic judgments there is always an inference, for an ideal content is connected with the sensible qualities that are given us. In other words we have always a construction, which depends on ideas, and which only indirectly is based on perception (vid. Book II.).

And, this being so, it seems as if now we were unable to proceed. If the subject is the real that appears in perception, how can events in the past and future, or a world in space outside the presentation, and how even can qualities not given to sense be referred to the object and considered as its adjectives? We

have already glanced at the solution of this problem, and what we now wish to show is the following. In synthetic judgments the ultimate subject is still the reality. That is not the same as the momentary appearance, and yet synthetic judgments are possible only by being connected with what is given at this very instant. The ideas of past and future events are projected from the base of present perception. It is only in that point that they encounter the reality of which they wish to be true.

"But past and future," the reader may object, "are surely realities." Perhaps they are, but our question is, Given a synthesis of ideas within my mind, how and where am I able to get at a reality to which to attribute them? How am I to judge unless I go to presentation? Let the past and future be as real as you please, but by what device shall I come in contact with them, and refer to them my ideas, unless I advance directly to the given, and to them indirectly? It is possible, I am aware, to assert that past realities are directly presented, and possible also (for all I know) to say the same of the future, and of all the space I am not in contact with, and of all the qualities that I do not perceive. In this way, no doubt, we dispose of the difficulty, and indeed may make a very simple matter of any kind of problem, if indeed any problems any longer will exist.

§ 20. But the persons I write for, and who are not so blessed with easy intuitions, will feel this difficulty, and there may come a temptation to fall back once more on the abandoned heresy and to say, In these synthetic judgments the subject cannot possibly be the reality. It must be an idea, and in the junction of ideas must lie the truth. And I think, perhaps, at the cost of repetition, we had better see where this temptation leads us.

When we say "It rained last Tuesday," we mean *this* last Tuesday, and not any other, but, if we keep to ideas, we do not utter our meaning. Nothing in the world that you can do to ideas, no possible torture will get out of them an assertion that is not universal. We can not escape by employing ideas of events in time, particulars as we call them. The event you describe is a single occurrence, but what you say

of it will do just as well for any number of events, imaginary or real. If you keep to ideas it is useless to make a reference to the present, and say, "The Tuesday that came before *this* day." For we have seen before (§ 8), that in analytic judgments we are equally helpless. The real is inaccessible by way of ideas. In attempting to become concrete and special, you only succeed in becoming more abstract and wholly indefinite. "This" "now" and "mine" are all universals. And your helpless iteration, "not this but this," will not get your expression any nearer to your meaning. If judgment is only the union of ideas, no judgment is ever about the individual.

§ 21. We must get rid of the erroneous notion (if we have it) that space and time are "principles of individuation," in the sense that a temporal or spatial exclusion will confer uniqueness upon any content. It is an illusion to suppose that, by speaking of "events," we get down to real and solid particulars, and leave the airy region of universal adjectives. For the question arises, What space and time do we really mean, and how can we express it so as not to express what is as much something else? It is true that, in the idea of a series of time or complex of space, uniqueness is in one sense involved; for the parts exclude one another reciprocally. But they do not exclude, unless the series is taken as one continuous whole, and the relations between its members are thus fixed by the unity of the series. Apart from this unity, a point on its recurrence could not be distinguished from the point as first given. And elsewhere we might ask, how far such an unity is itself the negation of mere exclusivity.

But, to pass by this question, it is clear that exclusion within a given series does not carry with it an absolute uniqueness. There is nothing whatever in the idea of a series to hint that there may not be any number of series, internally all indistinguishable from the first. How can you, so long as you are not willing to transcend ideas, determine or in any way characterize your series, so as to get its difference from every possible series within your description? It is idle to say "this," for "this" does not exclude except in *this* sphere, and it is idle to say "my," for it is only in *my* element that yours and mine collide. Outside it they are indifferent, and the ex-

pression "my" will not distinguish one world from the other. If we simply attend to the series itself, and declining to look outside, confine ourselves to the consideration of its character, then all that it contains might be common property of innumerable subjects, existing and enjoyed in the world of each, a general possession appropriated by none. The mere quality of appearance in space or time can not give singularity.

§ 22. The seeking for judgment in the synthesis of ideas once more has led us where there is no exit. With however little hope we must return to the doctrine, that judgment is the reference of an ideal content to the real which appears in time and space, which is to be encountered directly in presentation, but which can not be limited to a momentary instance. It is not by its quality, as a temporal event or phenomenon of space, that the given is unique. It is unique, not because it has a certain character, but because it *is given*. It is by the reference of our series to the real, as it appears directly within this point of contact, or indirectly in the element continuous with this point, that these series become exclusive. We perhaps may be allowed to express this otherwise by saying, it is only the "this" which is real, and ideas will suffice so far as "thisness," but can never give "this." It is perhaps a hard saying, and announces difficulties we shall need both courage and patience to contend with.

§ 23. Everything that is given us, all psychical events, be they sensations, or images, or reflections, or feelings, or ideas, or emotions—every possible phenomenon that can be present—both is "this" and has "thisness." But its stamp of uniqueness and singularity comes to it from the former and not from the latter. If we distinguish the aspects of existence and content (Chap. I. § 4), and put on the one side *that* anything is, and on the other side *what* it is, then the thisness falls within the content, but the this does not fall there. It is the mere sign of my immediate relation, my direct encounter in sensible presentation with the real world. I will not here ask how "this" is related to existence, how far it holds of the actual fact, and how far only of the mere appearance; whether it *is* or is only *for me*. Apart from that, at least so much is certain, that we find uniqueness in our contact with the real, and

that we do not find it anywhere else. This singularity which comes with presentation and is what we call "this," is not a *quality* of that which is given.

But thisness on the other hand does belong to the content, and is the general character of every appearance in space or time. Thisness, if we like, we may call particularity. Everything that is given us is given, in the first place, surrounded and immersed in a complex detail of innumerable relations to other phenomena in space or time. In its internal quality we find again a distinction of aspects, which we always can carry to a certain length, and can never be sure we have quite exhausted. And the internal relations of its component elements in space or time are again indefinite. We are never at the end of them. This detail appears to come to us on compulsion ; we seem throughout to perceive it as it is, and in no sense to make or even to alter it. And this detail it is which constitutes thisness.*

But such particularity in space or time, such an exclusive nature, after all, is only a *general* character. It falls in the content and does not give the existence. It marks the sort but it misses the thing. In abstraction from the this it is merely ideal, and, apart from the this, ideas as we know can not reach to uniqueness. No amount of thisness which an event possesses will exclude the existence of self-same events

* The apprehension of this character, it may be objected, takes time, and, if any time for observation is given, the product, for all we know, has been altered. But this difficulty occurs in all observation. We everywhere assume, first, that things are not different unless we can discriminate them. And we assume, in the second place, our ability to distinguish a change in ourselves from a change in the object. We assume that more of the same object is observed, unless we have reason either to suppose that our fancy has wandered away from that object, or that the object itself has undergone a change. I do not here ask if these assumptions are valid. But I may remark in passing, that the doubt if in introspection we examine a present, or only a past state of mind, should change its form. It should not take the two as exclusive here, unless it faces the same problem elsewhere. For the observation of external phenomena labours under the identical difficulty. If an internal fact can not possibly be *both* present *and* past, then an external fact must be likewise restricted. The two kinds of observation are not essentially different. External facts are not absolutely fixed, nor are internal facts in absolute flux.

in other like series. Such exclusiveness falls all within the description, and that which is only of this description is simply such and can not be this.

In every judgment, where we analyze the given, and where as the subject we place the term "this," it is not an idea which is really the subject. In using "this" we do *use* an idea, and that idea is and must be universal; but what we *mean*, and fail to express, is our reference to the object which is given as unique.

§ 24. And here we encounter an awkward question. The reader possibly may be willing to accept our account of thisness. He may agree that, so far as in our use of the term we mean mere relativity in space or time, in other words particularity, we do not at all go beyond the content. And he may allow the consequence that we have so an idea which is only universal. But in using "this," he may go on to object that we have in addition *another* idea. We have the idea of immediate contact with the presented reality: and it is that idea which is signified by "this," and which qualifies the idea which stands as the subject of our analytic judgment.

We answer, Assuredly, if such were the case, the reference to fact would inevitably and always fall outside the judgment. Once again we should be floating in the air, and never be more than hypothetical. But the question raised need not so be dismissed, for it leads to an interesting if subtle reflection. The idea of "this," unlike most ideas, can not be used as a symbol in judgment.

It is certain, in the first place, that we have the idea. Indeed we could scarcely deny that we had it, unless in so doing we actually used it. Beside the idea of exclusion in a series, which is mere thisness, we have also the idea of my immediate sensible relation to reality, and, if so, we have "this." We are able to abstract an idea of presence from that direct presentation which is never absent; and presence, though it does not fall within the content, though we can hardly call it a quality of the appearance, yet is recognized as the same amid a change of content, is separable from it, and makes a difference to it. Thus ideally fixed "this" becomes an universal among other universals.

§ 25. But, despite the likeness, it is very different from an ordinary idea. Ideas, we shall remember, are used as symbols (Chap. I.). In my idea of "horse" we have (i) the existence of an image in my head, (ii) its whole content, and (iii) its meaning. In other words we may always distinguish (i) that it is, and (ii) what it is, and (iii) what it signifies. The two first of these aspects belong to it as a fact. The third is the universal which does not belong to it, but is thought of without a relation to its existence, and in actual judgment is referred away to some other subject.

The idea of "this" has a striking difference. Distinguished as an aspect of presented reality, when we call it up we take any perception or feeling that is given, and, attending to the aspect of presence within it, recognize that as the meaning of our term. We contemplate it ideally, without any reference to the content of that which is actually before us.

But how shall we fare when, attempting a judgment, we attribute the adjective we have so cut loose to *another* substantive? It is here we are stopped. For any judgment so made we discover must be false. The other fact can not be presented without *ipso facto* altering the given. It degrades our given to one element within a larger presentation, or else it wholly removes it from existence. The given disappears and with itself carries our idea away. We are now unable to predicate the idea, since we no longer possess it, or if we still have it, then what supports it excludes that other fact to which we wish to refer it.

§ 26. To repeat the above, the presented instance of reality is unique. By discrimination we are able to fix that uniqueness in the shape of an idea. We thereupon try to make it the idea of something else. But, for the idea to be true of something else, that something else must be present and unique. We have then either two unique presentations, or one must disappear. If the first one goes the idea goes with it. If the last one goes there is now no fact for the idea to be referred to. In either case there can be no judgment. The idea, we see, is not the *true* idea of anything other than its own reality. It is a sign which, *if we judge*, can signify nothing except itself. To be least alone then when most

alone, and to enjoy the delights of solitude together, are phrases which have a very good sense: but, taken in their bare and literal meaning, they would exemplify the contradiction we have here before us.

Between the fact and the idea of the "this" in judgment there can be no practical difference. The idea of this would be falsely used, unless what it marks were actually presented. But in that case we should be trying to use a sign, when we have before us the fact which is signified. We can use the idea so far as to recognize the fact before us as a fact which is "this;" but such a use does not go beyond the given. It affirms of the subject a predicate without which the subject disappears. It implies discrimination within the fact in which, since the aspect discriminated is not separable from the given, that given with its aspect still remains as the subject. So that the addition of the idea adds nothing to the subject. And if again it were possible to import the idea from the content of *another* fact, the operation would be uncalled for and quite inoperative.

And it is not possible. It would be, as we have seen, the attempt to have before us two unique facts at once. What we mean by "this" is the exclusive focus of presentation which lights up its content, and it is of that singular content that we use the idea. And to treat that idea as a meaning which could be true elsewhere, would be to bring into our focus another content. But since both must be unique, as well as the same, a dilemma arises which we need not draw out.

§ 27. And if "this" be used in a different sense, if it does not mark the presence of the whole sensible detail that falls within the focus; if it is used for that which I specially attend to, the result will be the same. If I make A my object to the exclusion of all others, then this special relation to myself must be false, if used of any other. If applied to A it can not possibly also be applied to B.

"But," it may be said, "I exclusively attend to both. A and B are both elements within the given 'this,' and hence I can predicate 'this' of either. I can transfer the idea, which I find is true of one, and use it as a predicate which is true of the other. And so, after all, the idea of 'this,' will be used

symbolically." I am afraid of losing the main question in subtleties, but I must reply by pointing out a confusion. Since A and B are both taken together, you can not exclusively deal with each separately. So much is now clear. But, on the other hand, if you take each by itself as a mere element in the "this," then you can not predicate "this" of *either*. Both will *belong to* the "this," but neither will *be* that to which they belong. They will be presented, but neither by itself will *be* the unique presentation. They will not have the "this" in common, but the "this" will have them. It will be their common substantive which will share its own exclusive nature with nothing.

I hardly think that by further intricacies we shall make more clear what can not be made obvious. If anything in the above has been grasped by the reader, I trust to have shown that the use of "this," as a symbol in judgment, is not only impossible, but that, if it existed, it would be wholly nugatory.*

§ 28. We escape from ideas, and from mere universals, by a reference to the real which appears in perception. It is thus our assertion attains the uniqueness without which it would not correspond to the fact. And analytic judgments, it may seem, are thus secured to us. But now, when we return to the question we asked in § 19, and when we pass to judgments that are synthetic, and extend to spaces and times not falling within the radius of direct presentation, we seem at first sight to be no better off. What we have gained, it may now appear, has been at the expense of everything beyond. The series of all our spaces and times will now have to be referred to the one unique point of contact with reality. It is only so that their content can be stamped with the mark of fact. But it seems impossible to establish this relation.

The content of these synthetic assertions we know is

* "This" is not the only idea which can never be true as a symbol. I will not ask to what extent "this" means "for me," but what has been said of "this" will hold in the main of "I" "me" and "mine." But there are difficulties here which we can not discuss. We may remark in passing that, for the purposes of metaphysics, it would be necessary to find all those ideas whose content appears not able to be used as the adjective of something else. This would bear on the so-called "ontological proof." For the ideas of uniqueness, &c., vid. infr. §§ 38, 39.

universal. It may be true of innumerable other series. This unsubstantial chain, if left to itself, does not touch the ground in any one point. On the other hand, the given source of reality refuses, it seems, to have anything to do with these floating threads. Their symbolic content can not be directly attributed to the presentation, because it is irreconcileable with the content of that. And, if we can not have another presentation, where is the fact in connection with which our universals can attain reality?

§ 29. We must turn in our difficulty to a result we got from a former discussion. We saw that the real, which appears in perception, is not identical with the real just *as* it appears there. If the real must be "this," must encounter us directly, we can neither conclude that the "this" we take is all the real, or that nothing is real beyond the "this." It is impossible, perhaps, to get directly at reality, except in the content of one presentation: we may never see it, so to speak, but through a hole. But what we see of it may make us certain that, beyond this hole, it exists indefinitely. If by "this" we understand unique appearance, then, as "this" was not any part of the content, so neither is it any quality of the real, in such a sense as to shut up the real within that quality. It would belong to metaphysics to discuss this further, and we must here be content with a crude result. The real is what appears to me. The appearance is not generic but unique. But the real itself is *not* unique, in the sense in which its appearance is so.

The reality we divined to be self-existent, substantial, and individual: but, as it appears within a presentation, it is none of these. The content throughout is infected with relativity, and, adjectival itself, the whole of its elements are also adjectival. Though given as fact every part is given as existing by reference to something else. The mere perpetual disappearance in time of the given appearance is itself the negation of its claim to self-existence. And again, if we take it while it appears, its limits, so to speak, are never secured from the inroads of unreality. In space or in time its outside is made fact solely by relation to what is beyond. Living by relation to what it excludes, it transcends its limits to join

another element, and invites that element within its own boundaries. But with edges ragged and wavering, that flow outward and inward unstably, it already is lost. It is adjectival on what is beyond itself. Nor within itself has it any stability. There is no solid point of either time or space. Each atom is merely a collection of atoms, and those atoms again are not things but relations of elements that vanish. And when asked what is ultimate, and can stand as an individual, you can answer nothing.

The real can not be identical with the content that appears in presentation. It for ever transcends it, and gives us a title to make search elsewhere.

§ 30. The endeavour to find the completeness of the real, which we feel can not exist except as an individual, will lead us first to Synthetic judgments of time and space. But, before we proceed, we may pause for a moment, to reflect on the general nature of the attempt. If the reality is self-existent, self-contained, and complete, it needs, one would think, no great effort of reason to perceive that this character is not to be found in a mere series of phenomena. It is one thing to seek the reality *in* that series: it is quite another thing to try to find *as* the series. A completed series in time or space can not possibly exist. It is the well-known phantasm of the spurious infinite, a useful fiction, it may be, for certain purposes and at certain levels of thought, but none the less a phantasm which, until it is recognized, stops the way of all true philosophic thought. It emerges often in the school of "experience," in its Logic and again in its Hedonistic Ethics, where it begets and will continue to beget chimæras. We shall meet it again in the present chapter, but must return to our search for reality within a series of phenomena, a search not yet degraded to a pursuit of phantasms, but carrying in itself the root of illusion.

§ 31. The real then itself transcends the presentation, and invites us to follow it beyond that which is given. On the other hand, we seem to find contact with reality and to touch ground nowhere, so to speak, outside the presented. How then is a content to be referred to the real, if it can not be referred to the real as perceived? We must answer that the

content is referred *indirectly*. It is not attributed to the given as such; but, by establishing its connection with what is presented, it is attributed to the real which appears in that given. Though it is not and can not be found in presentation, it is true because it is predicated of the reality, and unique because it is fixed in relation with immediate perception. The ideal world of spaces beyond the sensible space, and of times not present but past and future, fastens itself on to the actual world by fastening itself to the quality of the immediate this. In a single word continuity of content is taken to show identity of element.

§ 32. But such continuity, and the consequent extension of the "this" as given, depend, like every other ideal construction, on identity. An inference always, we shall see hereafter, stands on the identity of indiscernibles. Sameness of quality proves real sameness (vid. Book II. Part I. Chap. VI.). And the identity here has a double form. (i) In the first place the symbolical content must have "thisness." (ii) In the second place it must share some point with the "this."

To explain, (i) the idea we are to connect with perception must be the idea of something in space or some event in time. It must have the character of particularity, the general idea of indefinite detail and endless relation. We know by this that it is of the same sort as the content of the given. The description of both is one and the same. They both have "thisness," and therefore their element *may be* identical.

(ii) But, so far as we have gone, we still are left in the world of universals, which *may* or *might* touch the ground in some place and meet the fact which appears in perception, but which do not certainly *do* thus. We wish, on the one side, to pass beyond presented content, and, on the other side, to connect with this content an ideal series: and we seek for a link by which to fasten them together.

That link is found by establishing a point which is the same in both, and is the same because its quality is the same. The "this" contains a complex of detail, either times or spaces (or both) in series, which we may call *c. d. e. f.* The idea, on its side, contains a series of particulars *a. b. c. d.* The identity of *c.d.* in each extends the perception *c. d. e. f.*

by the ideal spaces or times *a. b.*, and the whole is given by synthetical construction as a single fact *a. b. c. d. e. f.* The whole series now is referred to the real, and by the connection with unique presentation, has become a series of events or spaces, itself unique and the same as no other series in the world. It is thus by an inference that we transcend the given through synthetic judgments, and our following Books must explain more clearly the nature of inference, and the enormous assumption on which it reposes.

§ 33. Mental pathology will afford an illustration. There are cases where the subject or, if we please, the Ego seems divided in two. When one self is present the other is absent, and the memories of either self are distinct. Their pasts and futures do not ever touch. The explanation that is offered, and which seems sufficient, will illustrate our theme. It is because the *present* selves are different, that the past and future selves are foreign. It is because one system of ideas has not got a point of connection with the other system, or has rather some point which excludes the connection, that the one can never be used to extend ideally a present which belongs to the other. Some mode of morbid feeling or diseased perception, given now in presentation, links on to itself the ideas that are grouped by the same characteristic. The whole ideal region where that colouring fails, may perhaps be suggested, but can never be fixed in continuous relation with the present perception.*

§ 34. If we mean by phenomena the things we perceive, or the facts or appearances that are given to us, then the whole of England below our horizon (to say nothing at all of America and Asia), and every event that is past or future are *not* phenomena. They are not perceived facts. They exist in our minds as mere ideas, as the meaning of symbols. A phenomenon, I repeat, that is past or future is a sheer self-contradiction. It is time we thought of giving up our habit of talking about the "series of phenomena," or "thread of perceptions," or Heaven knows what else, as though we held these facts in our hands. One thing or the other. Either a phenomenon may be ideal, the content of a symbol and not even predicated

* Cf. Lotze, *Mikrokosmus*, I. 371.

directly of the present perception, or there is no phenomenon but what I here and now perceive. It is idle perhaps to appeal to facts in protest against the philosophy of "analysis" and the school of "experience." It is impossible, I know, to persuade the man who is wedded to these names, that he has failed to earn a legitimate title to neglect the first and to be false to the second. Profuse protestations, and jealousy of the untitled, are services found not too exacting, and which satisfy those who have long ago and cheaply become cool. But, for the sake of others, I will repeat once more. If a fact or event is what is felt or perceived, then a fact that is past is simple nonsense (cf. Book II. Part II. Chap. I.).

Of course, I know, it is easy to say that past events are all really there, and, being there, are remembered; as I presume the future, being all there, is anticipated. But suppose that there *is* a series of facts, both past and future, outside our minds, the question remains How can they get in? You may say, if you like, They are fond of a change, and walk in and out bodily and meet and converse there. Or an omnipotent Creator has endowed the mind with an extraordinary organ, which perpetually can do what no one understands, and, defying the insidious arts of the analyst, proves by the way the immortality of the soul. Or perhaps you may find it a "final inexplicability." Ultimate facts always are inexplicable, and we must not be put out if they contradict those doctrines they must know to be true. For it is natural for the inexplicable to behave inexplicably.

But perhaps there are readers content to remain on a level with ourselves. If so they will continue to believe the conclusion the facts have brought to us. And that conclusion is that events past and future, and all things not perceived, exist *for us* only as ideal constructions connected, by an inference through identity of quality, with the real that appears in present perception. In what character (if any) these things may really exist *for themselves*, is a question for metaphysics.

§ 35. Synthetic judgments thus cease to be merely adjectival, and they express a series of unique events by indirect reference to the real which appears in unique presentation. They are connected by an inference with the content of this

appearance, and so far are directly related to perception. But their ideas are never referred as adjectives to the presentation itself. They are attributed to the reality, which both shows itself there, and extends itself beyond. The content of our perceptions, and the content of our ideal constructions, are both the adjectives of one reality. They are both appearances, which come to us in different ways, but which both (unless our assumptions are false) are valid and true of the real world.

§ 36. Memory of the past, and prediction of the future, are separated clearly from mere imagination. In the former we have the reference to that reality which appears in perception. We have a judgment which is either true or false, because it implies a relation to fact. But imagination is without this reference. The merely imagined, we have seen before (Chap. I. § 14) may be stronger than that which we judge to be true. What we only fancy may have more thisness; it may have more compulsory and particular detail than that which we remember. But what it wants is a point of identity by which to fasten it on to the "this." And without such a link it must fall outside the series.

We generally, it is true, take forcible detail and strong particularity as a sign of fact, and look for its place in the series of events. But, if the place is not found, the imagined fact is never secured to us. The visions of dreams may be very definite, but the content of those visions refuses to link itself to the series of events connected with perception, and so, if we can not get rid of the ideas, at least we stamp them as mere illusions.

If this were the place for an excursion into psychology, we should find some difficulties and many interesting questions. When once we have referred a content to the real, we generally tend to refer it again. We say that we know it happened at *some* time, though when we can not say. And we might be tempted perhaps to think that such ideas have greater strength or fuller detail than mere imaginations. This would be erroneous. It is not strength or detail which marks these ideas, but something so dim that we can not grasp it. It may be the general idea of reference to the "this," which, repelled by the content of the given "this," transcends it vaguely. It

may be, on the other hand, some unconscious element of idea or feeling, which serves to identify in an indefinite way the imagined with fact. For it is a mistake to suppose that these links with reality need be anything explicit. A feeling so obscure that we are not aware of it, and which perhaps no effort of attention would be able to distinguish from its vague totality of consciousness, may serve as the basis by which we separate a truth from a fiction (§ 33). We must remember again that the point of connection may be, so to speak, in our inward selves, and not at all in the outward series. If a falsehood imagined is in the end believed, it is not always because it gains some kind of direct connection with outward fact. In the end it may actually identify itself with the habitual feeling which we have of ourselves. And this common meeting-ground of illusion and truth serves often to confuse them together in our minds. But we can not here further pursue these discussions.

§ 37. To resume, It is not the mere symbolic use of ideas which distinguishes truth from bare imagination. For imagination is not confined to particular images. Just as in perception it is hard to say where inference first appears, and where the analytic judgment becomes synthetic, so in much imagination we shall find the presence of a discursive element. The idea of a circle, we might say and say falsely, was nothing but an image; but the idea of a chiliagon would show us at once that there is a point where our imagery fails. And it is obvious that ideas of abstract relations may be held before the mind without any judgment. This, however, is a content which is wholly symbolic, and yet (where no hypothetical judgment comes in) it is purely imaginary. It is detached from the existence of the image in our minds, but it is not attached to another reality.

§ 38. We now perhaps are able to say what it is we mean by the idea of an individual (or, we had better say, of a particular) fact. We saw the futility of seeking to find this in the proper names of persons, for what they stand for is never confined to a single event. The idea of particularity implies two elements. We must first have a content qualified by "thisness," and we must add to that content the general idea

of reference to the reality. In other words a particular must first be represented in a series; this gives us the first element. But so far we do not get beyond mere "thisness;" the members are exclusive, within the series, but the whole collection is not unique. To get the complete idea of a particular fact we must make our series, so to speak, *externally* exclusive as well and thus particular. And we do not do this till we qualify it by the idea of reference to our unique reality.

If we *actually* attributed the series to reality, we not only should have got the idea that we wanted, but also more. We should have judged that our idea was true in fact. And in this case we do not wish to go so far. We desire to have the idea of uniqueness, but not to assert the reality of the idea.

We possess as we have seen (§ 24) in the idea of "this" the idea of immediate contact with the real, and it is this idea we must add to our series. When we think of the series both as a whole, and as touching the real in a point of presentation, we have thought of it then as truly particular. But there we must stop. For if we went on to judge our idea to be true, we should have to find it a special place in the unique series which extends perception. And we saw that to use the idea of "this" as the symbol of another content in judgment, was quite impossible. So long, however, as we abstain from judgment, we can attach the aspect of "this" to a content other than that which is really presented.

This is what we mean by the idea of a particular. There is a difference when we come to an individual person. Our idea is there particular, since it has limits within a particular series. But it also involves a real identity persisting throughout a change of events. And so it falls outside the class of mere synthetic judgments.

§ 39. Uniqueness is merely the negative side of the idea of "this." A content is unique when, although of a sort, and that means regarded from the aspect of content, it nevertheless is the same as no other, is the only one there is of its sort. Uniqueness implies the idea of a series, and is then relative or absolute. It is relative when the series, which contains the element which excludes the others, is itself *not* unique. In

any universe our fancy constructs a thing may be unique, but only unique within that universe. We have, on the other hand, absolute uniqueness when the series is connected with direct presentation. In that case the relations within the series fix against each other the elements it holds, and nothing can be fact without its appearing in that one series. But the real subject, which, in predicating uniqueness, excludes any other event of the kind, we must remember, is not the particular event as such and taken by itself. It is rather the real which appears in that particular and so excludes others. We have here a negative existential judgment, for the nature of which we must consult our Third Chapter.

§ 40. After meeting many difficulties, some of which, I trust, may have been overcome, we have finished our account of the second division of singular judgments. We must pass to the third, the assertions not confined to an event or a number of events in time (§ 7). But, before we proceed, let us pause for a moment, and, however dangerous the experiment may be, let us try to put before our very eyes a synthetic judgment. Let us call before our mind some series of pictures, like Hogarth's Progress of the harlot or rake ; but let us also imagine something beside. One picture in the series must *be* the reality, the actual person in a real room, and on the walls of this real room must be hung the series of earlier and later pictures. By virtue of the sameness in the quality of the man, as he is in the room and is in the pictures, we, neglecting the appearance in particular frames, arrange the whole series as *his* past and future. We transcend in this way the visible room and the presented scene, and view the real life of the person extending itself as a series in time.

But the man in the real room that we see, is body and bones and breath and blood, while his past and future, if we mean by reality a sensible fact, are nothing in the world but glass and wood and paint and canvas. It is the same with all our future and past. The events of memory and of anticipation are facts now in our minds, but they no more *are* the reality they represent than paint and canvas are a throbbing heart. No doubt they stand for reality, and we

flatter ourselves that, if they can not be fact, at least they are true. True indeed they may be if truth means a natural and inevitable way of representing the real. But if by their truth we understand more than this; if we say that the reality *is* as it appears in our ideal construction, and that actually there *exists* a series of facts past present and future—I am afraid that truth, if we come to examine it, would change into falsehood. It would be false if measured by the test of perception, and it may be, if tried by another standard, would be falser still.

§ 41. The life of a man cannot be presented in any one scene, and our very illustration has gone farther than we thought. That life is not even a mere succession of serial events, but contains (so we think of it) a something the same, a real identity which appears in all, but which is not any, nor even every, event. We find ourselves brought to the third main class of singular judgments, and are speaking of a subject which is not an event. These judgments are separated into two divisions, according as the individual with which they deal is related to some given period of time, or not to any time in particular.

III. (i) In the history of a man or nation we have a content referred to the real, but to the real as it appears throughout one certain part of that series which is determined by relation to given perception. (ii) In the second division we must place any judgments we make about the Universe or God or the soul, if we take the soul to be eternal. Our ideas are here identified with the real that we find in perception, but they do not attach themselves to any one part of the phenomenal series. It may be said, of course, that such judgments are illusory. But, as we saw, that conclusion, if true, could only be established by a metaphysical enquiry we have no place for. The judgments exist, and logic can do nothing else but recognize them.

This third and last class of singular judgments is distinct from the others. Its essence is that its ultimate subject is not the real, as it appears in the "this" or in any one event in the series. But the distinction is to a certain extent unstable. Just as analytic judgments are always tending to become

synthetic, so here it is impossible to separate sharply the first division of this class from synthetic judgments. On the one hand the continuity of the element of time strictly excludes a mere serial character. In every judgment about events we unknowingly are asserting the existence of an identity. On the other hand an individual living in a series seems naturally to belong to that class of judgment which constructs a series. Since, however, when an individual is concerned, we explicitly recognize something real, enduring throughout the changes of events, it is better perhaps to keep up a distinction which in principle must be admitted to fluctuate. The example of an individual person took us from analytic to synthetic judgments. And it has served again to carry us on further.

§ 42. We have now considered all the three classes of singular judgments, and have seen in what way they attribute an idea to the real which appears. We have already anticipated the account to be given of Existential judgments, and may deal with them rapidly. Confining ourselves here to those which are affirmative, we can say at once that the subject in all of them is the ultimate reality, either (*a*) as it appears in some part of the series determined by the "this," or (*b*) as it underlies the whole series of phenomena. When I say "A exists," or "A is real," the content A is in truth the predicate. We use it to qualify existence or reality, in one of the two senses we have now mentioned.

The enquiry into existential propositions reduces to absurdity the notion that judgment consists in ideas. If we add to the adjectival idea of A another adjectival idea of reality, then, failing wholly in reference to fact, we fall entirely short of judgment. But this is not all. The idea of reality, like the idea of "this," is not an ordinary symbolic content, to be used without any regard to its existence. The idea of what is real, or of that which exists, is found as an element in that actual reality and actual existence which we encounter directly. It can not in judgment be removed from this, and be transplanted away to *another* reality. We have here the same obstacle which met us before (§§ 25–27). The idea cannot be predicated of anything except its own reality. For, to get the idea, you must take it by a distinction from what is

given. If you then make it a predicate of anything not given, you have a collision, and your judgment disappears. But if, on the other hand, you predicate it of that which actually is given, your procedure is idle. Why employ an idea to assert reality when you have the fact, and when your ideal synthesis is a mere analysis of this given reality, and attributed in the end to that as subject? "Real" is clearly the adjective of "reality," and we know no reality but what appears in presentation. The idea then, to be true, must be true of that reality. But, if so, we must have the subject before us in the shape of fact, and, if we did not, the idea would at once become false. For a more detailed discussion we may refer to §§ 25–27.

Nor would it repay us here to examine the somewhat surprising view which Herbart has advocated (vid. § 75). Our enquiries in this chapter should have prepared us for the result that the ultimate subject is never an idea, and that the idea of existence is never a true predicate. The subject, in the end, is always reality, which is qualified by adjectives of ideal content.

§ 43. We cannot say there is a class of existential judgments, for all singular judgments have by this time been shown to be existential. And, with this conclusion, we may pass beyond them to another branch of affirmative judgments. In these we no longer have to do with any particular facts nor in any sense with separate individuals. They are universal in the sense of transcending what is singular. They are not "concrete" but "abstract," since, leaving things, they assert about qualities, alone or in synthesis. In this respect, we may remark in passing, there is no real difference between the "general" and the "abstract:" for, taken in comparison with the particular thing, the general idea is a mere abstraction.

§ 44. We have reached the common type of universal judgment; and the point in this which we notice at once, is that every such judgment is concerned with adjectivals. They assert a connection between elements of content, and say nothing about the place of those elements in the series of

events. In "Equilateral triangles are equiangular" all I affirm is that with one set of qualities you will have the other set, but I make no assertion about where and when. And "Mammals are warm-blooded" does not tell me anything about this or that mammal. It merely assures me that, finding one attribute, I shall find the other.

The fact that is asserted in an abstract judgment is not the existence of the subject or predicate (§ 6), but simply the connection between the two. And this connection rests on a supposal. The abstract universal, "A is B," means no more than "given A, in that case B," or "if A, then B." In short, such judgments are always hypothetical and can never be categorical. And the proper terms by which to introduce them are "given," or "if," or "whenever," or "where," or "any," or "whatever." We should beware of "all."

§ 45. For the use of "all," we have seen above (§ 6), is most misleading and dangerous. It encourages that tendency to understand the universal in the sense of a collection, which has led to so many mistaken consequences. We shall glance elsewhere at that extraordinary teaching on the subject of quantity, in which the traditional logic delights. And we shall see hereafter, when we come to inference, the absurd incompetence of the *dictum de omni*. For our present purpose we need criticize no further the attempt to understand the "all" collectively. Even if that use were justifiable in itself, it would here be irrelevant; for a judgment where "all" means a real collection of actual cases, belongs to a class we have already disposed of. If "all" signifies a number of individual facts, the judgment is concerned with actual particulars. And so it obviously is but one form of the singular judgment. "All A is B," will be an abbreviated method of setting forth that this A is B, and that A is B, and the other A is B, and so on until the lot is exhausted. Such judgments fall clearly under the head of singular.

But, when this class is banished to the preceding category, have we any universal judgments left us? We can not doubt that; for there are judgments which do not assert the existence of particular cases. We come at once upon the judgments that connect adjectival elements, and that say nothing about

the series of phenomena. These abstract universals are always hypothetical and never categorical.*

§ 46. At this point we must pause to encounter an objection. "The distinction," we may be told, "between categorical and hypothetical is really illusory. Hypothetical judgments can all be reduced to, and in the end *are* nothing but, a kind of categorical." If this were well founded, it would certainly occasion us serious difficulty. But I do not think we need much disturb ourselves.

"If A is B it is C," we may be told, "is equivalent to The instances or cases of A that are B are also C, and this is surely a categorical judgment." I answer, if "the cases of A that are B" means the existing cases of A B, and no others, then the judgment no doubt is categorical, but it is not an abstract universal. It is merely collective, and it most certainly does *not* mean what we meant by our hypothetical judgment. "If butter is held to the fire it melts" is no assertion about mere existing pats of butter. And when it is reduced to the form, "All cases of the holding of butter, &c.," it does not become any more categorical. "All cases" means here "*Suppose* any case."

Indeed, if we steadily keep in view the difference between a simple assertion about fact and an assertion on the strength of and about a supposition, we may perhaps be puzzled, but we are not likely to be led far astray by these elementary mistakes.

§ 47. And with this remark I could leave the matter. But it is perhaps worth while, by another instance, to illustrate the futility of this attempt to turn hypothetical into categorical judgments. J. S. Mill in his *Logic* (I. 4, § 3) approaches the subject with an air of easy superiority. "A conditional proposition is a proposition concerning a proposition."

"What is asserted is not the truth of either of the propositions but the inferribility of the one from the other." "If A is B, C is D is found to be an abbreviation of the following:

* The extensional theory of judgment and reasoning is dealt with elsewhere (Chap. VI. and Book II. Part II.Chap. IV.). We may here remark that, taking "A is B" to mean "the things that are A are the things that are B," the judgment must be singular, if an existing set of things be denoted, and will be universal and abstract if possible things are included as well.

'The proposition C is D, is a legitimate inference from the proposition A is B.'"

How this doctrine is connected with Mill's other views as to the import of propositions, an expert in Mill-philology no doubt could inform us. But, left to ourselves, we can only conjecture the doctrine he here intended to teach. (i) If he really meant "*inferribility*," then *cadit quæstio*. For at once the statement is not about what is, but what may be or might be. It is not simply about existing propositions, but clearly involves a supposal of some kind, and is therefore *not* reduced to categorical form. It is still *Suppose* you have got AB, *then* you may go legitimately to CD. (ii) But no doubt there is more than this verbal quibble. He tells us that one *is* an inference from the other. Does this mean (*a*) that both are actually asserted, and that I further assert that I really have argued to the second from the first? Surely not that: but then what else? (*b*) Can it mean that, without asserting either proposition, I hold them in my mind and affirm their connection? It *may* mean this. But then this process of taking up a statement without believing it, and of developing its consequences, is in fact nothing else than a supposition. The connection asserted is not between realities, and the proposition is still hypothetical. (iii) But the extraordinary illustrations towards the end of the section point to another interpretation; "The subject and predicate are names of propositions." Without, however, attempting the hopeless task of understanding, we may perhaps state the issue in the form of a dilemma. Either (*a*) one proposition, in the sense of a little heap of words, does, as a particular event in my head, now follow another such heap; or (*b*) it *would* follow, *if* the other were there. The second alternative is of course still hypothetical. In the former at last we have got to something categorical, but nothing to which a hypothetical judgment (or indeed any judgment) could possibly be reduced. It would be an error too gross to merit refutation.

Whatever else may be the meaning of the writer, we after all may remain sure of this. Either the categorical judgment, to which he professes to reduce the hypothetical, is *not* its equivalent; or else it contains, under some flimsy veil of

verbal ambiguity, a supposition which is the condition of the judgment.

§ 48. Such universal judgments are all hypothetical, and with this conclusion we are landed once more in our former difficulties (§ 6). Judgment, we saw, always meant to be true, and truth must mean to be true of fact. But here we encounter judgments which seem not to be about fact. For a hypothetical judgment must deal with a supposal. It appears to assert a necessary connection, which holds between ideas within my head but not outside it. But, if so, it can not be a judgment at all; while on the other hand it plainly does assert and can be true or false.

We are not able to rest in this conclusion, and yet we can not take back our premises. Let us then try to look more closely at the problem, and ask more narrowly what is involved in these judgments. And, in the first place, we can not expect to succeed until we know what a supposal is.

A supposition, in the first place, is known to be ideal, and known perhaps to diverge from fact. At a low stage of mind, where everything is fact (cf. Chap. I.), it could not exist. For the supposed must be known as an ideal content, and, in addition, it has to be retained before the mind without a judgment. It is not referred as an adjective, either positively or negatively, to the real. In other words reality is not qualified either by the attribution or the exclusion of it. But though it does not judge, a supposition is intellectual, for (as such), it excludes desire and emotion. And again it is more than mere imagination, for it is fixed by attention and preserves, or should preserve, its identity of content (vid. Book III. Chap. III. §§ 23, 24). It certainly is all this, and yet this is not all. For to think of a chimæra is not quite the same thing as to *suppose* a chimæra.

A supposition means thinking for a particular end, and in a special way. It is not a mere attending to a certain meaning, or an analysis of its elements. It has a reference to the real world, and it involves a desire to see what happens. We may illustrate perhaps from other usages. "Say it is so for argument's sake," "Treat it as this and then you will see," are much the same as, "Suppose it to be so." A supposal is, in

short, an ideal experiment. It is the application of a content to the real, with a view to see what the consequence is, and with a tacit reservation that no actual judgment has taken place. The supposed is treated as if it were real, in order to see how the real behaves when qualified thus in a certain manner.

You might say it is the adding the idea of existence to a given thought, while you abstain from judgment. But that I do not think would be satisfactory. For it is not the mere *idea* of existence that is used. What we use is the real that is always in immediate contact with our minds, and which in a variety of judgments we already have qualified by a certain content. And it is to this that we bring up another idea, in order to see what result will come of it.

§ 49. So far there is neither truth nor falsehood, for we have not judged. The operation, we may say, is so far "subjective." It is all our own doing, and all of it holds inside our heads, and not at all outside. The real is not qualified by the attribute we apply to it. But, so soon as we judge, we have truth or falsehood, and the real is at once concerned in the matter. The connection of the consequence, of the "then" with the "if," of the result of our experiment with its conditions, is the fact that is asserted, and that is true or false of the reality itself.

But the question is *how*. You do not assert the existence of the ideal content you suppose, and you do not assert the existence of the consequence. And you can not assert the existence of the connection, for how can a connection remain as a fact when no facts are connected? "If you only had been silent you would have passed for a philosopher." But you were not silent, you were not thought a philosopher, and one was not, and could not possibly *be*, a result of the other. If the real must be qualified by the connection of the two, it seems that it will not be qualified at all. Neither condition, nor result, nor relation can be ascribed to it: and yet we *must* ascribe something, for we judge. But what can it be?

§ 50. When I go to a man with a fictitious case, and lay before him a question of conduct, and when he replies to me, "I should act in this way, and not in the other way," I may come from him with some knowledge of fact. But the fact is

not the invented position, nor yet the hypothetical course of action, nor the imaginary relation between the two. The fact is the quality in the man's disposition. It has answered to a trial in a certain way. But the test was a fiction, and the answer is no fact, and the man is not qualified by one or the other. It is *his* latent character that is disclosed by the experiment.

It is so with all hypothetical judgment. The fact that is affirmed as an adjective of the real, and on which depends the truth or falsehood, does not explicitly appear in the judgment. Neither conditions nor result of the ideal experiment are taken to be true. What is affirmed is the mere ground of the connection ; not the actual existing behaviour of the real, but a latent quality of its disposition, a quality which has appeared in the experiment, but the existence of which does not depend on that experiment. "If you had not destroyed our barometer, it would now forewarn us." In this judgment we assert the existence in reality of such circumstances, and such a general law of nature, as would, *if we suppose* some conditions present, produce a certain result. But assuredly those conditions and their result are not predicated, nor do we even hint that they are real. They themselves and their connection are both impossible. It is the diminution of pressure and the law of its effect, which we affirm of the actual world before us. And of course that law is resolvable further (§ 52).

§ 51. In all judgment the truth seems none of our making. We perhaps need not judge, but, if we judge, we lose all our liberty. In our relation to the real we feel under compulsion (§ 4). In a categoric judgment the elements themselves are not dependent on our choice. Whatever we may think or say, they exist. But, in a hypothetic judgment, there is no compulsion as regards the elements. The second, indeed, depends on the first, but the first is arbitrary. It depends on my choice. I may apply it to the real, or not, as I please ; and I am free to withdraw the application I have made. And, when the condition goes, the result goes too. The compulsion extends no further than the connection, and yet it does not even extend to the connection as such. The relation of the elements in a hypothetical judgment is not an actual attribute

of the real, for that relation itself is arbitrary. It need not be true outside the experiment. The fact which existed before the experiment, and remains true after it, and in no way depends on it, is neither the elements, nor the relation between them, but it is a quality. It is the ground of the sequence that *is* true of the real, and it is this ground which exerts compulsion.

§ 52. This quality of the real is not explicit in the judgment, and, in respect of that judgment, is occult or latent. We know it is there because of its effects, but we are not able to say what it is. We can not even tell, without further enquiry that it is not the same as what we have asserted in another judgment, the elements of which, and also their relation, were very different (cf. Chap. III. § 19). And, when we push the investigation further, and ask, Are these qualities, that thus seem to lie at the base of our judgments, *altogether* latent, or only latent each in respect of its peculiar judgment, then we get at once into difficult questions. It is certain on the one hand that we can find the grounds of many such judgments, which thus have *relatively* become explicit. But this only serves to bring us nearer to the doubt, whether in the end they have ceased to be latent. Do we ever get to a ground of judgment which we can truly ascribe to the real as its quality? Or are we left with ultimate judgments, which are certainly true, but neither the elements nor relations of which are true of reality? Must we say, in the end, that the quality, which we know is the base of our synthesis, remains in other ways altogether unknown and is finally occult? We seem here to be asking, in another form, for the limits of explanation, and it would be the task of metaphysics to pursue an enquiry which must here be broken off.

§ 53. We have seen that, what hypothetical judgments assert, is simply the quality which is the ground of the consequence. And all abstract universals, we have seen, are hypothetical. It may here be asked Are the two things one? Are all hypothetical judgments thus universal?

This might for a moment appear to be doubtful, since the real, to which application is made, is at times an individual. And for the purposes of this, and the following section, I will

give some examples; "If God is just the wicked will be punished," "Had I a toothache I should be wretched," "If there were a candle in this room it would be light," "If it is now six o'clock we shall have dinner in an hour," "If this man has taken that dose, he will be dead in twenty minutes." It may surprise some readers to hear that these judgments are as universal as "All men are mortal:" but I think we shall find that such is the case.

In the first place it is certain that in none of these judgments is the subject taken to be actually real. We do not say above that a just God exists, or that I have a toothache; we only suppose it. The subject is supposed, and, if we consider further, we shall find that subject is nothing more than an ideal content, and that what is asserted is not anything beside a connection of adjectives. The "that," the "this," the "I," the "now," do not really pass into the supposition. They are the point of reality to which we apply our ideal experiment, but they themselves are in no case *supposed*. More or less of their content is used in the hypothesis, and passes into the subject. But, apart from themselves, their content can not possibly be called individual.

§ 54. This would hardly be doubtful, were it not for the ambiguity of all these assertions, a point to which we should carefully attend. "If he had murdered he would have been hanged," may perhaps assert nothing but the *general* connection of hanging with murder, and the "he" is irrelevant. But "if God is just the wicked will be punished," may perhaps not say that punishment would follow from *any* justice, but only from justice that is qualified by omnipotence. On the other hand, when you say "If this man has taken that dose, &c.," you do not tell me if his speedy death would happen because the dose would poison any one, or would only poison such a man as he is, or would not even poison such a kind of man, unless under present special conditions. And the other examples would all entangle us in similar ambiguities. The supposition is not made evident, and reflection convinces us that, supposing we know the subject of the judgment, at all events we do not display our knowledge.

§ 55. And since this is so, since the adjectival content is not

made explicit, since all we have is an indefinite reference to this or that case, we fall into the mistake of thinking it is the particular we have to deal with. But our real assertion, when we come to analyze it, never takes in the "that," or the "now," or the "this." It is always the content about which we assert. But, because we are not clear what that content is, and because we know it is to be found *in* the individual as supposed, we fire, so to speak, a charge of shot instead of a bullet, and take the individual as the point of reality to which our supposition is to be confined. In this way we give rise to the erroneous idea that the reality itself passes into the supposal. The fact, as we have seen, is that some of the content either is or makes part of the adjectival condition about which we assert. But, because that content has not been analyzed, we go to the individual to get it in the lump. The real judgment is concerned with nothing but the individual's *qualities*, and asserts no more than a connection of adjectives. In every case it is strictly universal as well as hypothetical.

§ 56. We have found, thus far, that all abstract judgments are hypothetical, and in this connection we have endeavoured to show what a supposition is, and to lay bare that occult affirmation as to the real, which is made in every hypothetical judgment. Singular judgments we have already discussed, and we found that, be they analytic or synthetic, they all at first sight seem categorical. They do not merely attribute to the real a latent quality, which manifests itself in an unreal relation, but they qualify the real by the actual content which appears in the judgment. It is not the mere connection, but the very elements which they declare to exist.

We have still remaining another kind of judgment (§ 7), but, before we proceed, it is better to consider the result we have arrived at. That result perhaps may call for revision, and it is possible that the claim of the singular judgment to a categoric position may not maintain itself.

CHAPTER II. (*Continued*).

§ 57. What is the position in which we now find ourselves? We began with the presumption that a judgment, if true, must be true of reality. On the other hand we found that every abstract universal judgment was but hypothetical. We have endeavoured to reconcile these conflicting views by showing in what way, and to what extent, a conditional judgment asserts of the fact. But singular judgments stand apart, and have claimed to be wholly categorical, and true of the reality; and hence they demand a position above that given to universal judgments. We must now scrutinize this pretension. We must still defer all notice of those individual judgments which transcend the series of events in time. Confining ourselves to judgments about the phenomenal series, let us proceed to ask, Are they categorical? Do they truly and indeed rank higher, and closer to the real world, than those universal judgments which we found were hypothetical? We shall perhaps do well to prepare our minds for an unwelcome conclusion.

In passing from the singular to the universal judgment, we seem to have been passing away from reality. Instead of a series of actual phenomena connected with the point of present perception, we have but a junction of mere adjectivals, the existence of which we do not venture to affirm. In the one case we have what seem solid facts: in the other we have nothing but a latent quality, the mere name of which makes us feel uneasy. We have not quite lost our hold of the real, but we seem to have left it a long way off. We keep our connection by an impalpable thread with a veiled and somewhat ambiguous object.

But our thoughts may perhaps take a different colour, if we look around us in the region we have come to. However strange it may seem to us at first, yet our journey towards

shadows and away from the facts has brought us at last to the world of science. The end of science, we all have been taught, is the discovery of *laws;* and a law is nothing but a hypothetical judgment. It is a proposition which asserts a synthesis of adjectivals. It is universal and abstract. And it does not assert the existence of either of the elements it connects. It may *imply* this (§ 6), but such an implication is not essential. In mathematics, for instance, the truth of our statement is absolutely independent of the existence of either subject or predicate. In physics or chemistry the truth does not depend on the actual existence at the present moment of the elements and their relation. If it did so, the law might be true at one instant and false at the next. When the physiologist, again, tells that strychnine has a certain effect on nerve-centres, he does not wait to enunciate his law until he is sure that some dose of strychnine is operating in the world: nor does he hasten to recall it as soon as he has lost that assurance. It would be no advantage to dwell upon this point. It may be regarded now as a certain result, that the strict expression for all universal laws must begin with an "if," and go on with a "then."

§ 58. And from this we may draw a certain presumption. If the singular judgment is nearer the fact, and if, in leaving it, we have actually receded from reality, yet at least in science that is not felt to be the case. And there is another presumption which may help to strengthen us. In common life we all experience the tendency to pass from one single case to some other instance. We take what is true at one time and place to be always true at all times and places. We generalize from a single example. We may deplore this tendency as an ineradicable vice of the unphilosophic mind, or we may recognize it as the inevitable condition of all experience, and the *sine qua non* of every possible inference (vid. Book II.). But in either case, let us recognize it or deplore it, we still do not feel the passage we have made as an *attempt* to go from the stronger to the weaker, from that which is more true to that which is less. And yet, without doubt, it is a transition away from the individual to the universal and hypothetical.

§ 59. But a matter of this sort is not settled by presump-

tions. There are prejudices, it may be, that operate both ways. And we may be told, on behalf of the singular judgment, that it is *the fact* that these judgments are categorical; for they do assert the actual existence of their adjectival content: and, attributing to the real an explicit quality, they are truer than any hypothetical judgment, if indeed they are not the *only* true judgments. Such, we take it, is the claim of the singular judgment, and it can not be denied that its claim in one respect is very well founded. It does *assert* the existence of its content, and does affirm directly of the real. But the answer we must make is that, although it does so assert and affirm, yet, when we leave the popular view and look more closely at the truth of things, the assertion and affirmation which it makes are *false*, and the claim it puts forward rests on a mistake. We must subject the pretensions of the singular judgment to an examination which we think may prove fatal.

§ 60. We need spend no time on the synthetic judgment. In transcending what is given by actual perception, we without any doubt make use of an inference. A synthesis of adjectives is connected with the present by virtue of the identity of a point of content. By itself this synthesis is merely universal, and is therefore hypothetical. It becomes categoric solely by relation to that which is given, and hence the whole weight of the assertion rests on the analytic judgment. If that is saved, it will then be time to discuss its extension: but if, on the other hand, the analytic be lost, it carries with it the synthetic judgment.

§ 61. Let us turn at once to the judgments which assert within what is given in present perception. These seem categorical because they content themselves with the analysis of the given, and predicate of the real nothing but a content that is directly presented. And hence it appears that the elements of these judgments must actually exist. An ideal content is attributed to the real, which that very real does now present to me. I am sure that nothing else is attributed. I am sure that I do not make any inference, and that I do not generalize. And how then can my assertion fail to be true? How, if true, can it fail to be categorical?

We maintain, on the other hand, that analytic judgments of sense are all false. There are more ways than one of saying the thing that is not true. It is not always necessary to go beyond the facts. It is often more than enough to come short of them. And it is precisely this coming short of the fact, and stating a part as if it were the whole, which makes the falseness of the analytic judgment.

§ 62. The fact, which is given us, is the total complex of qualities and relations which appear to sense. But what we assert of this given fact is, and can be, nothing but an ideal content. And it is evident at once that the idea we use can not possibly exhaust the full particulars of what we have before us. A description, we all know, can not ever reach to a complete account of the manifold shades, and the sensuous wealth of one entire moment of direct presentation. As soon as we judge, we are forced to analyze, and forced to distinguish. We must separate some elements of the given from others. We sunder and divide what appears to us as a sensible whole. It is never more than an arbitrary selection which goes into the judgment. We say "There is a wolf," or "This tree is green:" but such poor abstractions, such mere bare meanings, are much less than the wolf and the tree which we see; and they fall even more short of the full particulars, the mass of inward and outward setting, from which we separate the wolf and the tree. If the real as it appears is $X = a\ b\ c\ d\ e\ f\ g\ h$, then our judgment is nothing but $X = a$, or $X = a\text{-}b$. But $a\text{-}b$ by itself has never been given, and is not what appears. It was *in* the fact and we have taken it out. It was *of* the fact and we have given it independence. We have separated, divided, abridged, dissected, we have mutilated the given.* And we have done this arbitrarily: we have selected what we chose. But, if this is so, and if every analytic judgment must inevitably so alter the fact, how can it any longer lay claim to truth?

§ 63. No doubt we shall be told, "This is idle subtlety. The judgment does not copy the whole perception, but why should it do so? What it does say, and does reproduce, at all events is there. Fact is fact, and given is given. They do not cease

* Cf. here Lotze's admirable chapter, *Logik*, II. VIII.

to be such because something beside themselves exists. To maintain that 'There is a wolf' is false, because an abstract wolf is not given entirely by itself, is preposterous and ridiculous."

And I am afraid that with some readers this will end the discussion. But to those who are willing to venture further, I would suggest as encouragement that a thing may seem ludicrous, not because it is at all absurd in itself, but because it conflicts with hardened prejudice. And it is a prejudice of this kind that we have now encountered.

§ 64. It is a very common and most ruinous superstition to suppose that analysis is no alteration, and that, whenever we distinguish, we have at once to do with divisible existence. It is an immense assumption to conclude, when a fact comes to us as a whole, that some parts of it may exist without any sort of regard for the rest. Such naive assurance of the outward reality of all mental distinctions, such touching confidence in the crudest identity of thought and existence, is worthy of the school which so loudly appeals to the name of Experience. Boldly stated by Hume (cf. Book II. II. Chap. I. § 5), this cardinal principle of error and delusion has passed into the traditional practice of the school, and is believed too deeply to be discussed or now recognized. The protestations of fidelity to fact have been somewhat obtrusive, but self-righteous innocence and blatant virtue have served once more here to cover the commission of the decried offence in its deadliest form. If it is true in any sense (and I will not deny it), that thought in the end is the measure of things, yet at least this is false, that the divisions we make within a whole all answer to elements whose existence does *not* depend on the rest. It is wholly unjustifiable to take up a complex, to do any work we please upon it by analysis, and then simply predicate as an adjective of the given these results of our abstraction. These products were never there as such, and in saying, as we do, that as such they are there, we falsify the fact. You can not always apply in actual experience that coarse notion of the whole as the sum of its parts into which the school of "experience" so delights to torture phenomena. If it is wrong in physiology to predicate the results, that are reached by dissection, simply and as such

of the living body, it is here infinitely more wrong. The whole that is given us is a continuous mass of perception and feeling; and to say of this whole, that any one element would be what it is there, when apart from the rest, is a very grave assertion. We might have supposed it not quite self-evident, and that it was possible to deny it without open absurdity.*

§ 65. I should like to digress so far as to adduce two examples of error, which follow from the mistake we are now considering. When we ask "What is the *composition* of Mind," we break up that state, which comes to us as a whole, into units of feeling. But since it is clear that these units by themselves are not all the "composition," we are forced to recognize the existence of relations. But this does not stagger us. We push on with the conceptions we have brought to the work, and which of course can not be false, and we say, Oh yes, we have here some more units, naturally not quite the same as the others, and—*voilà tout.* But when a sceptical reader, whose mind has been warped by a different education, attempts to form an idea of what is meant, he is somewhat at a loss. If units have to exist together, they must stand in relation to one another; and, if these relations are also units, it would seem that the second class must also stand in relation to the first. If A and B are feelings, and if C their relation is another feeling, you must either suppose that component parts can exist without standing in relation with one another, or else that there is a *fresh* relation between C and AB. Let this be D, and once more we are launched on the infinite process of finding a relation between D and C–AB; and so on for ever. If relations are facts that exist *between* facts, then what comes *between* the relations and the other facts? The real truth is that the units on one side, and on the other side the relation existing between them, are nothing actual. They are fictions of the mind, mere distinctions within a single reality, which a common delusion erroneously takes for independent facts. If we believe the assurance of a distinguished Professor,† this burning faith in the absurd and the impossible, which was once the privilege

* For the general validity of Analysis and Abstraction see Book III.

† Vid. Huxley, *Hume*, pp. 52, 69.

and the boast of theology, can now not be acquired anywhere outside the sacred precincts of the laboratory. I am afraid it is difficult to adopt such an optimistic conclusion.

§ 66. And perhaps I may be pardoned if, by another illustration, I venture to show how entirely the mind which is purified by science can think in accordance with orthodox Christianity. In the religious consciousness God and Man are elements that are given to us in connection. But, reflecting on experience, we make distinctions, and proceed as above to harden these results of analysis into units. We thus have God as an unit on one side, and Man again as an unit on the other: and then we are puzzled about their relation. The relation of course must be *another* unit, and we go on to find that we should like something *else*, to mediate once more, and go between this product and what we had at first. We fall at once into the infinite process, and, having taken up with polytheism, the length we go is not a matter of principle.

§ 67. To return to the analytic judgment. When I say "There is a wolf," the real fact is a particular wolf, not like any other, in relation to this particular environment and to my internal self, which is present in a particular condition of feeling emotion and thought. Again, when I say "I have a toothache," the fact once more is a particular ache in a certain tooth, together with all my perceptions and feelings at that given moment. The question is, when I take in my judgment one fragment of the whole, have I got the right to predicate this of the real, and to assert "It, *as it is*, is a fact of sense"? Now I am not urging that the analytic judgment is in *no* sense true. I am saying that, if you take it as asserting the existence of its content as given fact, your procedure is unwarranted. And I ask, on what principle do you claim the right of selecting what you please from the presented whole and treating that fragment as an actual quality? It certainly *does* not exist by itself, and how do you know that, when put by itself, it *could* be a quality of *this* reality? The sensible phenomenon is what it is, and is all that it is; and anything less than itself must surely be something *else*. A fraction of the truth, here as often elsewhere, becomes entire falsehood, because it is used to qualify the whole.

§ 68. The analytic judgment is not true *per se*. It can not stand by itself. Asserting, as it does, of the particular presentation, it must always suppose a further content, which falls outside that fraction it affirms. What it says is true, if true at all, because of something else. The fact it states is really fact only in relation to the rest of the context, and only because of the rest of that context. It is not true except under that condition. So we have a judgment which is really conditioned, and which is false if you take it as categorical. To make it both categorical and true, you must get the condition inside the judgment. You must take up the given as it really appears, without omission, unaltered, and unmutilated. And this is impossible.

§ 69. For ideas are not adequate to sensible perception, and, beyond this obstacle, there are further difficulties. The real, which appears within the given, can not possibly be confined to it. Within the limit of its outer edges its character gives rise to the infinite process in space and time. Seeking there for the simple, at the end of our search we still are confronted by the composite and relative. And the outer edges themselves are fluent. They pass for ever in time and space into that which is outside them. It is true that the actual light we see falls only upon a limited area; but the continuity of the element, the integrity of the context, forbids us to say that this illuminated section by itself is real. The reference of the content to something other than itself lies deep within its internal nature. It proclaims itself to be adjectival, to be relative to the outside; and we violate its essence if we try to assert it as having existence entirely in its own right. Space and time have been said to be "principles of individuation." It would be truer to say they are principles of relativity. They extend the real just as much as they confine it.

I do not mean that past and future *are* actually given, and that they come within the circle of presentation. I mean that, *although* they can not be given, the given would be destroyed by their absence. If real with them, it would not be given; and, given without them, it is for ever incomplete and therefore unreal. The presented content is, in short, not

compatible with its own presentation. It involves a contradiction, and might at once on that ground be declared to be unreal. But it is better here to allow it free course, and to suffer it to develope by an impossible consequence its inherent unsoundness.

§ 70. We saw that you can not ascribe to the real one part of what is given in present perception. And now we must go further. Even if you could predicate the whole present content, yet still you would fail unless you asserted also both the past and the future. You can not assume (or I, at least, do not know your right to assume) that the present exists independent of the past, and that, taking up one fragment of the whole extension, you may treat this part as self-subsistent, as something that owes nothing to its connection with the rest. If your judgment is to be true as well as categorical, you must get the conditions entirely within it. And here the conditions are the whole extent of spaces and times which are required to make the given complete. The difficulty is insuperable. It is not merely that ideas can not copy facts of sense. It is not merely that our understandings are limited, that we do not know the whole of the series, and that our powers are inadequate to apprehend so large an object. No possible mind could represent to itself the completed series of space and time; since, for that to happen, the infinite process must have come to an end, and be realized in a finite result. And this cannot be. It is not merely inconceivable psychologically; it is metaphysically impossible.

§ 71. Our analytic judgments are hence all either false or conditioned. "But *conditioned*," I may be told, "is a doubtful phrase. After all it is not the same as hypothetical. A thing is condition*al* on account of a supposal, but on the other hand it is condition*ed* by a fact. We have here the difference between 'if' and 'because.' When a statement is true in consequence of the truth of another statement, they both are categorical." I quite admit the importance of the distinction, and must recur to it hereafter (Chap. VII. § 10). But I deny its relevancy for our present purpose.

The objection rests on the following contention. "Admitted that in the series of phenomena every element is

relative to the rest and is because of something else, yet for all that the judgment may be categorical. The something else, though we are unable to bring it within the judgment, though we can not in the end ever know it at all and realize it in thought, is, for all that, fact. And, this being so, the statement is true; since it rests in the end, not at all on an 'if' but upon a 'because,' which, although unknown, is none the less real. Let the analytic judgment admit its relativity, let it own its adjectival and dependent character, and it surely saves itself and remains categorical."

But even this claim it is impossible to admit. I will not raise a difficulty about the "because" which is never realized, and the fact which can never be brought before the mind. My objection is more fatal. In the present case there *is* no because, and there *is* no fact.

We are fastened to a chain, and we wish to know if we are really secure. What ought we to do? Is it much use to say, "This link we are tied to is certainly solid, and it is fast to the next, which seems very strong and holds firmly to the next: beyond this we can not see more than a certain moderate distance, but, so far as we know, it all holds together"? The practical man would first of all ask, "Where can I find the last link of my chain? When I know that is fast, and not hung in the air, it is time enough to inspect the connection." But the chain is such that every link begets, so soon as we come to it, a new one; and, ascending in our search, at each remove we are still no nearer the last link of all, on which everything depends. The series of phenomena is so infected with relativity, that, while it is itself, it can never be made absolute. Its existence refers itself to what is beyond, and, did it not do so, it would cease to exist. A last fact, a final link, is not merely a thing which we can not know, but a thing which could not possibly be real. Our chain by its nature can not have a support. Its essence excludes a fastening at the end. We do not merely fear that it hangs in the air, but we know it must do so. And when the end is unsupported, all the rest is unsupported. Hence our conditio*ned* truth is only conditio*nal*. It avowedly depends on what is not fact, and it is not categorically true. Not standing

by itself, it hangs from a supposition; or perhaps a still worse destiny awaits it, it hangs from nothing and falls altogether.

§ 72. It will be said, of course, that this is mere metaphysics. Given is given, and fact is fact. Nay we ourselves distinguished above the individual from the hypothetic judgment, on the ground that the former went to perception, and that we found there existing the elements it asserted. Such a plain distinction should not be ignored, because it disappears in an over-subtle atmosphere. But I do not wish to take back this distinction. It is valid at a certain level of thought; and, for the ordinary purposes of logical enquiry, individual judgments, both synthetic and analytic, may conveniently be taken as categorical, and in this sense opposed to universal judgments.

But, when we go further into the principles of logic, and are forced to consider how these classes of judgment stand to one another, we are certain to go wrong, if we have not raised such questions as the above. It is not enough to know that we have a ground of distinction. We must ask if it is a *true* ground. Is it anything more than a point to reckon from? Is it also fact? Does the light of presence, which falls on a content, guarantee its truthfulness even if we copy? Are the presented phenomenon, and series of phenomena, actual realities? And, we have seen, they are not so. The given in sense, if we could seize it in judgment, would still disappoint us. It is not self-existent and is therefore unreal, and the reality transcends it, first in the infinite process of phenomena, and then altogether. The real, which (as we say) appears in perception, is neither a phenomenon nor a series of phenomena.

§ 73. It may be said "This is only the product of reflection. If we are content to take the facts as they come to us, if we will only leave them just as we feel them, they never disappoint us. They neither hang by these airy threads from the past, nor perish internally in a vanishing network of never-ending relations between illusory units. The real, as it simply comes to us in sense, has nothing of all this. It is one with itself, individual, and complete, absolute and

categorical." We are not here concerned to controvert this statement. We are not called on to ask if anything that is given is given apart from intellectual modification, if there is any product we can observe and watch, with which we have not already interfered. We have no motive here to raise such an issue; nor again do we rejoice in that infatuation for intellect, and contempt for feeling, which is supposed to qualify the competent metaphysician. Nor will we pause to argue that frustrated feeling itself heads the revolt against the truth of sense. It was a baffled heart that first raised the suspicion of a cheated head.

You may say, if you like, that the real just as we feel it is true. But, if so, then *all* judgments are surely false, and your singular judgment goes with the rest. For our present purpose we may admit your assertion, but, if it is meant as an objection, we answer it by asking the question, What then? Who is it who says this? Who counts himself so free from the sin of reflection as to throw this stone? Some man no doubt who has not an idea of the consequences of his saying; some writer whose pages are filled with bad analysis and dogmatic metaphysics; some thinker whose passion for "experience" is mere prejudice in favour of his own one-sided theory, and whose loyal regard for the sensible fact means inability to distinguish it from that first result of a crude reflection in which he sticks.

For the present we may assume, what metaphysics would discuss, that phenomena are what we can not help thinking them *in the end*, and that the *last* result of our thought is true, or all the truth we have. It is not the beginning but the end of reflection which is valid of the real; or we are such at least that our minds are unable to decide for aught else. And we have seen that our thinking about the real, if we remain at the level of the analytic judgment, will not stand criticism. The result of our later and, we are forced to believe, our better reflection is conviction that at least this judgment is not true. To assert as a quality of the real either the whole or part of the series of phenomena, is to make a false assertion.

§ 74. The reality is given and is present to sense; but you

cannot, as we saw (§ 11), convert this proposition, and say Whatever is present and given is, as such, real. The present is not merely that section of the phenomena in space and time which it manifests to us. It is not simply the same as its appearance. Presence is our contact with actual reality ; and the reception of the elements of sensuous perception as existing facts is one kind of contact, but it is not the only kind.

In hypothetical judgments there is a sense in which the real is given ; for we feel its presence in the connection of the elements, and we ascribe the ground to the real as its quality. Hypothetical judgments in the end must rest on direct presentation, though from that presentation we do not take the elements and receive them as fact. It is merely their synthesis which holds good of the real (§ 50), and it is in our perception of the ground of that synthesis that we come into present contact with reality. I will not ask if this contact is more direct than that which supports the analytical judgment. But at all events we may say it is truer ; since truth is what is true of the ultimate real. A supersensible ultimate quality is not much to assert, but at all events the assertion seems not false. On the other hand the categoric affirmation of the analytic judgment of sense we know is not true. The content it asserts we know is not real. And, taken in this sense, there remains no hope for the individual judgment.

§ 75. There is no hope for it at all, till it abates its pretensions, till it gives up its claims to superiority over the hypothetic judgment, and is willing to allow that it itself is no more than conditional. But it does not yet know the degradation that awaits it. It may say, "It is true that I am not categorical. My content is conditioned, and the 'because' has turned round in my hands into 'if.' But at least I am superior to the abstract hypothetical. For in that the elements are not even asserted to have reality, whereas, subject to the condition of the rest of the series, I at least assert my content to be fact. So far at least I affirm existence and maintain my position."

But this claim is illusory, for if the individual judgment becomes in this way hypothetical, it does not assert that its

content has *any* existence. If it did it would contradict itself, and I will endeavour to explain this.

The content *a–b* in the categoric judgment was directly ascribed to real existence. The abstract universal judgment *a–b* does not ascribe either *a* or *b* or their connection to the real; it merely ascribes a quality *x*. The question now is Can you save the categoric *a–b* by turning it into a hypothetical in which *a–b* is still asserted of existence, though under a condition,—or must it become the universal *a–b* which ignores existence? In the latter case it would simply mean, "Given *a*, then *b*." But in the former it would run, "Given something *else*, then *a–b* exists." This illusory claim is not very pretentious, but I wish to show that it is suicidal.

Drobisch (*Logik*, § 56), following Herbart (I. 106), translates the judgment "P exists," into "If anything exists anywhere, then P exists." I consider this translation to be incorrect; for it covertly assumes that something does exist, and hence is in substance still categorical. And if we apply this translation to the facts of sense, then what is really supposed is the completed series of other phenomena, and the translation must run thus, "If *everything else* exists, then P exists." But the assertion is now suicidal, for "everything else," we have seen above (§ 70), can never be a real fact. The hypothetical assertion of existence is therefore made dependent on a condition which can not exist. Now it is not true that the consequence of a false hypothesis must be false; but it certainly is true, when an impossible ground is laid down as the sole condition of existence, that in a roundabout way existence is denied. The individual judgment, we saw, was false when taken categorically. And now, we see, when taken hypothetically, instead of asserting it rather denies, or at least suggests that denial may be true.

§ 76. The only hope for the singular judgment lies in complete renunciation. It must admit that the abstract, although hypothetical, is more true than itself is. It must ask for a place in the same class of judgment and be content to take the lowest room there. It must cease to predicate its elements of the real, and must confine itself to asserting

their connection as adjectives generally, and apart from particular existence. Instead of meaning by "Here is a wolf," or "This tree is green," that "wolf" and "green tree" are real facts, it must affirm the general connection of wolf with elements of the environment, and of "green" with "tree." And it must do this in an abstract sense, without any reference to the particular fact. In a low and rudimentary form it thus tends to become a scientific law, and, entirely giving up its original claims, it now sets its foot on the ladder of truth.

§ 77. But it remains upon the very lowest round. Every judgment of perception is in a sense universal, and, if it were not so, it could never be used as the basis of inference. The statement goes beyond the particular case, and involves a connection of adjectives which is true without respect to "this" "here" and "now." If you take it as ascribing its ideal content to *this* reality, it no doubt is singular, but, if you take it as asserting a synthesis *inside* that ideal content, it transcends perceptions; for anywhere else with the same conditions the same result would hold. The synthesis is true, not here and now, but universally.

And yet its truth remains most rudimentary, for the connection of adjectives is immersed in matter. The content is full of indefinite relations, and, in the first vague form which our statements assume, we are sure on the one hand to take into the assertion elements which have nothing to do with the synthesis, and, on the other hand, to leave out something which really helps to constitute its necessity. We say for example, "This body putrefies;" but it does not putrefy because it is this body. The real connection is far more abstract. And again on the other hand it would not putrefy simply because of anything that *it* is, and without foreign influence. In the one case we add irrelevant details, and in the other we leave out an essential factor. In the one case we say, "The real is such that, given *abc*, then *d* will follow," when the connection is really nothing but *a–d*. In the other case we say, "The connection is *a–b*," when *a* is not enough to necessitate *b*, and the true form of synthesis is *a* (*c*)*–b*. Measured by a standard of scientific accuracy, the first forms

of our truths must always be false. They say too little, or too much, or both; and our upward progress must consist in correcting them by removing irrelevancies and filling up the essential.*

§ 78. The practice of science confirms the result to which our long analysis has brought us; for what is once true for science is true for ever. Its object is not to record that complex of sensible phenomena, which from moment to moment perception presents to us. It desires to get a connection of content, to be able to say, Given this or that element, and something else universally holds good. It endeavours to discover those abstract elements in their full completeness, and to arrange the lower under the higher. Recurring to a term we used before, we may say its aim is to purge out "thisness," to reconstruct the given as ideal syntheses of abstract adjectives. Science from the first is a process of idealization; and experiment, Hegel has long ago told us, is an idealizing instrument,-for it sublimates fact into general truths.

Both in common life and in science alike, a judgment is at once applied to fresh cases. It is from the first an universal truth. If it really were particular and wholly confined to the case it appears in, it might just as well have never existed, for it could not be used. A mere particular judgment does not really exist, and, if it did exist, would be utterly worthless (cf. Chap. VI. and Book II.).

§ 79. It is time that we collected what result has come from these painful enquiries. If we consider the ultimate truth of assertions, then, so far as we have gone, the categorical judgment in its first crude form has entirely disappeared. The distinction between individual and universal, categorical and hypothetical, has been quite broken through. All judgments are categorical, for they all do affirm about the reality, and assert the existence of a quality in that. Again, all are hypothetical, for not one of them can ascribe to real existence its elements as such. All are individual, since the real which supports that quality which forms the ground

* For explanation and illustration I must refer to Lotze's admirable chapter cited above.

of synthesis, is itself substantial. Again all are universal, since the synthesis they affirm holds out of and beyond the particular appearance. They are every one abstract, for they disregard context, they leave out the environment of the sensible complex, and they substantiate adjectives. And yet all are concrete, for they none of them are true of anything else than that individual reality which appears in the sensuous wealth of presentation.

§ 80. But, if we remain at a lower point of view, if we agree not to scrutinize the truth of judgments, and if we allow assertions as to particular fact to remain in the character which they claim for themselves, in that case our result will be somewhat different. Abstract judgments will all be hypothetical, but the judgments that analyze what is given in perception will all be categorical. Synthetic judgments about times or spaces beyond perception will come in the middle. They involve an inference on the strength of an universal, and so far they must have a hypothetical character. They again involve an awkward assumption, for you can go to them only through the identity of an element in the several contents of a perception and an idea. As however, on the strength of this assumption, the universal is brought into connection with the given, the "if" is so turned into a "because," and the synthetic judgment may be called categorical. The two classes, so far, will on one side be assertions about particular fact and on the other side abstract or adjectival assertions. The latter are hypothetical, and the first categorical.

§ 81. We have all this time omitted to consider that class of judgment which makes an assertion about an individual which is not a phenomenon in space or time (§ 41). Is it possible that here we have at last a judgment which is not in any sense hypothetical? Can one of these directly predicate of the individual real an attribute which really and truly belongs to it? May we find here a statement which asserts the actual existence of its elements, and which is not false? Can truth categorical be finally discovered in some such judgment as "The self is real," or "Phenomena are nothing beyond the appearance of soul to soul"? It would seem to

us strange indeed if this were so, and yet after all perhaps it is our minds that are really estranged.

But we can not here attempt to answer these questions. We can only reply when asked where truth categorical dwells, Either here or nowhere.

CHAPTER III.

THE NEGATIVE JUDGMENT.

§ 1. After the long discussion of the preceding chapter, we are so familiar with the general character of judgment that we can afford to deal rapidly with particular applications. Like every other variety, the negative judgment depends on the real which appears in perception. In the end it consists in the declared refusal of that subject to accept an ideal content. The suggestion of the real as qualified and determined in a certain way, and the exclusion of that suggestion by its application to actual reality, is the proper essence of the negative judgment.

§ 2. Though denial, as we shall see, can not be reduced to or derived from affirmation, yet it would probably be wrong to consider the two as co-ordinate species. It is not merely as we shall see lower down (§ 7), that negation presupposes a positive ground. It stands at a different level of reflection. For in affirmative judgment we are able to attribute the content directly to the real itself. To have an idea, or a synthesis of ideas, and to refer this as a quality to the fact that appears in presentation, was all that we wanted. But, in negative judgment, this very reference of content to reality must itself be an idea. Given X the fact, and an idea $a-b$, you may at once attribute $a-b$ to X; but you can not deny $a-b$ of X, so long as you have merely X and $a-b$. For, in order to deny, you must have the suggestion of an affirmative relation. The idea of X, as qualified by $a-b$, which we may write $x\,(a-b)$, is the ideal content which X repels, and is what we deny in our negative judgment.

It may be said no doubt that in affirmative judgment the real subject is always idealized. We select from the whole that appears in presentation, and mean an element that we do not

mention (Book III. I. Chap. VI. § 12). When we point to a tree and apply the word "green," it may be urged that the subject is just as ideal as when the same object rejects the offered suggestion "yellow." But this would ignore an important difference. The tree, in its presented unity with reality, can accept at once the suggested quality. I am not always forced to suspend my decision, to wait and consider the whole as ideal, to ask in the first place, Is the tree green? and then decide that the tree is a green tree. But in the negative judgment where "yellow" is denied, the positive relation of "yellow" to the tree must precede the exclusion of that relation. The judgment can never anticipate the question. I must always be placed at that stage of reflection which sometimes I avoid in affirmative judgment.

§ 3. And this distinction becomes obvious, if we go back to origins and consider the early developement of each kind. The primitive basis of affirmation is the coalescence of idea with perception. But mere non-coalescence of an idea with perception is a good deal further removed from negation. It is not the mere presence of an unreferred idea, nor its unobserved difference, but it is the failure to refer it, or identify it, which is the foundation of our first denial. The exclusion by presented fact of an idea, which attempted to qualify it, is what denial starts from. What negation must begin with is the attempt on reality, the baffled approach of a qualification. And in the consciousness of this attempt is implied not only the suggestion that is made, but the subject to which that suggestion is offered. Thus in the scale of reflection negation stands higher than mere affirmation. It is in one sense more ideal, and it comes into existence at a later stage of the developement of the soul.*

§ 4. But the perception of this truth must not lead us into error. We must never say that negation is the denial of an existing judgment. For judgment, as we know, implies belief; and it is not the case that what we deny we must once have believed. And again, since belief and disbelief are incompatible, the negative judgment would in this way be made to depend

* Compare on this whole subject Sigwart, *Logik*, I. 119 and foll. I do not, however, wholly accept his views.

on an element which, alike by its existence or its disappearance, would remove the negation itself. What we deny is not the reference of the idea to actual fact. It is the mere idea of the fact, as so qualified, which negation excludes; it repels the suggested synthesis, not the real judgment.

§ 5. From this we may pass to a counterpart error. If it is a mistake to say that an affirmative judgment is presupposed in denial, it is no less a mistake to hold that the predicate alone is affected, and that negation itself is a kind of affirmation. We shall hereafter recognize the truth which this doctrine embodies, but, in the form it here assumes, we can not accept it. The exclusion by fact of an approaching quality is a process which calls for its own special expression. And when we are asked to simplify matters by substituting "A is Not-B" for "A is not B," we find an obvious difficulty. In order to know that A accepts Not-B, must we not already have somehow learnt that A excludes B? And, if so, we reduce negation to affirmation by first of all denying, and then asserting that we have denied,—a process which no doubt is quite legitimate, but is scarcely reduction or simplification.

§ 6. There is a further objection we shall state hereafter (§ 16) to the use of Not-B as an independent predicate. But at present we must turn to clear the ground of another error. We may be told that negation "affects only the copula;" and it is necessary first to ask what this means. If it means what it says, we may dismiss it at once, since the copula may be wanting. If the copula is not there when I positively say "Wolf," so also it is absent when I negatively say "No wolf." But, if what is meant is that denial and assertion are two sorts of judgment, which stand on a level, then the statement once again needs correction. It is perfectly true that these two different sorts of judgment exist. The affirmative judgment qualifies a subject by the attribution of a quality, and the negative judgment qualifies a subject by the explicit rejection of that same quality. We have thus two kinds of asserted relation. But the mistake arises when we place them on a level. It is not only true that, as a condition of denial, we must have already a

suggested synthesis, but there is in addition another objection. The truth of the negative may be seen in the end to lie in the affirmation of a positive quality; and hence assertion and denial cannot stand on one level. In "A is not B" the real fact is a character x belonging to A, and which is incompatible with B. The basis of negation is really the assertion of *a quality that excludes* (x). It is not, as we saw, the mere assertion of the quality of exclusion (Not-B).

§ 7. Every negation must have a ground, and this ground is positive. It is that quality x in the subject which is incompatible with the suggested idea. A is not B because A is such that, if it were B, it would cease to be itself. Its quality would be altered if it accepted B; and it is by virtue of this quality, which B would destroy, that A maintains itself and rejects the suggestion. In other words its quality x and B are disparate or discrepant. And we cannot deny B without affirming in A the pre-existence of this disparate quality.

But in negative judgment x is not made explicit. We do not say what there is in A which makes B incompatible. We often, if asked, should be unable to point out and to distinguish this latent hindrance: and in certain cases no effort we could make would enable us to do this. If B is accepted, A loses its character; and in these cases we know no more. The ground is not merely unstated but is unknown.

§ 8. The distinctions of "privation" and "opposition" (Sigwart, 128 foll.) do not alter the essence of what we have laid down. In a privative judgment the predicate "red" would be denied of the subject simply on the ground that red was not there. The subject might be wholly colourless and dark. But if "red" were denied on the ground that the subject was coloured green, it would be the presence of an opposite quality that would exclude, and the judgment would then be based on positive opposition. This distinction we shall find in another context to be most material (cf. Chap. VI. and Book III. II. Chap. III. § 20); but, for our present purpose, it may be called irrelevant. In the one case as in the other, the subject is taken with a certain character; and by addition as well as by

diminution that individual character may be destroyed. If a body is not red because it is uncoloured, then the adding-on of colour would destroy that body as at present we regard it. We may fairly say that, if the predicate were accepted, the subject would no longer be the subject it is. And, if so, in the end our denial in both cases will start from a discrepant quality and character.

§ 9. It may be answered, no doubt, that the subject, as it is now and as we now regard it, is not the same thing as the subject itself. In the one case, the subject rejects a suggestion through a quality of its own, in the other it may reject on the strength of *our* failure. But I must persist in denying that this objection is relevant. In both cases alike the subject is taken as somehow determined; and it is this determination which (whatever it comes from) does give the subject a positive character, which in both cases lies at the base of the denial. No subject could repel an offered suggestion simply on the strength of what it was *not*. It is because the "not-this" must mean "something *else*," that we are able to make absence a ground for denial. We shall all agree that the nothing which *is* nothing can not possibly do anything, or be a reason for aught.

These distinctions do not touch the principle we stand upon, but I admit they give rise to most serious difficulties. And, mainly for the sake of future chapters, it may be well if we attempt here to clear our ideas. And (i) first, when we have a case of "opposition," there the subject repels the offered predicate because it has in its content a positive quality, filling the space which the predicate would occupy, and so expelling it. If a man has blue eyes, then that quality of blueness is incompatible with the quality brown. But (ii), when we come to privation, two cases are possible. In the first of these (*a*) within the content of the subject there is empty space where a quality should be. Thus, a man being eyeless, in this actual content lies the place where his eyes would be if he had them. And this void can not possibly be a literal blank. You *must* represent the orbits as somehow occupied, by peaceful eyelids, or unnatural appearance. And so the content itself gets a quality, which, in contrast to the

presence of eyes, may be nothing,* but which by itself, has a positive character, which serves to repel the suggestion of sight.

§ 10. But privation can rest on another basis (*b*). The content of the subject may contain no space which could possibly be qualified by the presence of the predicate. What rejects the predicate is no *other* determination of the content itself, but is, so far as that content itself is concerned, an absolute blank. It is difficult to find illustrations of this instance. If I say "A stone does not feel or see," it may rightly be urged "Yes, because it *is* a stone, and not simply because it is nothing else." But we can find an example of the privation we want in the abstract universal. The universal idea (cf. Sigwart, 130), if you keep it in abstraction, repels every possible extension of its character. Thus "triangle," if you mean by it the mere abstraction, can neither be isosceles nor scalene nor rectangular; for, if it were, it would cease to be undetermined. We may invent a stupid *reductio ad absurdum:* This isosceles figure is certainly a triangle, but a triangle is certainly not isosceles, therefore——.

If we release the universal from this unnatural abstraction, and use it as an attribute of real existence, then it can not support such a privative judgment. For, when referred to reality, we know it must be qualified, though we perhaps can not state its qualification. Once predicate triangle of any figure, and we no longer can deny every other quality. The triangle is determinate, though we are not able to say how. It is only the triangle as we happen *not* to know it, which repels the suggestion of offered predicates. It is our ignorance, in short, and not the idea, which supports our exclusion of every suggestion.

§ 11. In a judgment of this kind the base of denial is neither the content of the subject itself, nor is it that content *plus* a simple absence; for a simple absence is nothing at all.

* I may mention that, though contrast can not always be taken as holding true of the things contrasted, yet for all that it may rest on a positive quality. Thus, even in the case of a word like blindness, we should be wrong if we assumed that the blind man is qualified simply by the absence of sight from the part which should furnish vision. His mind, we can not doubt, has a positive character which it would lose if another sense were added.

The genuine subject is the content of the idea *plus my* psychological state of mind. The universal abstraction, ostensibly unqualified, is determined by my mental repulsion of qualities. And the positive area which excludes the predicate really lies in that mental condition of mine. My ignorance, or again my wilful abstraction, is never a bare defect of knowledge. It is a positive psychological state. And it is by virtue of relation to this state, which is used as content to qualify the subject, that the abstraction, or the ignorance, is able to become a subject of privation. We shall see that, in this form, the universal may more truly be called particular (Chap. VI. § 35); for it *is* determined and qualified, not by any developement of the content, but simply by extraneous psychological relation.

§ 12. The various kinds of negative judgment follow closely the varieties of affirmation. The immediate subject may be part of the content of present perception ("This stone is not wet"); or it may be found in some part of the series of space, or again of time, which we do not perceive ("Marseilles is not the capital of France," "It did not freeze last night"). Again what is denied may be a general connection ("A metal need not be heavier than water"). In this last case it is of course the unexpressed quality at the base of the hypothesis (Chap. II. § 50) which the real excludes. But, in all negative judgment, the ultimate subject is the reality that comes to us in presentation. We affirm in all alike that the quality of the real excludes an ideal content that is offered. And so every judgment, positive or negative, is in the end existential.

In existential judgment, as we saw before (Chap. II. § 42), the apparent is not the actual subject. Let us take such a denial as "Chimæras are non-existent." "Chimæras" is here ostensibly the subject, but is really the predicate. It is the quality of harbouring chimæras which is denied of the nature of things. And we deny this because, if chimæras existed, we should have to alter our view of the world. In some cases that view, no doubt, can be altered, but, so long as we hold it, we are bound to refuse all predicates it excludes. The positive quality of the ultimate reality may remain occult or be made explicit, but this, and nothing else, lies always at the base of a negative judgment.

§ 13. For logical negation can not be so directly related to fact as is logical assertion. We might say that, as such and in its own strict character, it is simply "subjective:" it does not hold good outside my thinking. The reality repels the suggested alteration; but the suggestion is not any movement of the fact, nor in fact does the given subject maintain itself against the actual attack of a disparate quality. The process takes place in the unsubstantial region of ideal experiment. And the steps of that experiment are not even asserted to exist in the world outside our heads. The result remains, and is true of the real, but its truth, as we have seen, is something other than its first appearance.

The reality is determined by negative judgments, but it can not be said to be directly determined. The exclusion, as such, can not be ascribed to it, and hence a variety of exclusions may be based on one single quality. The soul is not an elephant, nor a ship in full sail, nor a colour, nor a fire-shovel; and, in all these negations, we do make an assertion about the soul. But you can hardly say that the subject is determined by these exclusions as such, unless you will maintain that, after the first, the remainder must yield some fresh piece of knowledge. You may hold that "all negation is determination," if you are prepared to argue that, in the rejection of each new absurd suggestion, the soul exhibits a fresh side of its being, and in each case performs the special exclusion by means of a new quality. But it seems better to say that nothing is added by additional exclusions. The developement and application of these may proceed *ad infinitum*, but the process is arbitrary and, in the end, unreal. The same quality of the soul which repels one predicate, repels here all the rest, and the exclusion itself takes place only in our heads.

I do not mean to deny that a thing may be qualified by the exclusion of others, that the real character of a fact may depend on what may be called a negative relation. What I mean to say is that the negative judgment will not express this. It asserts that a predicate is incompatible, but it does not say that either the predicate, or the incompatibility, are real facts. If you wish to say this you must transcend the sphere of the negative judgment.

§ 14. We must not, if we can help it, introduce into logic the problems of the "dialectical" view. It may be, after all, that everything is just so far as it is not, and again is not just so far as it is. Everything is determined by all negation; for it is what it is as a member of the whole, and its relation to all other members is negative. Each element in the whole, itself the whole ideally while actually finite, transcends itself by mere self-assertion, and by mere self-emphasis brings forth the other that characterizes and negates it. If everything thus has its disparate in itself, then everything in a sense must be its own discrepancy. Negation is not only one side of reality, but in the end it is either side we please. On this view it would be doubtful if even the whole is positive; for it *is* just so far as by position it disperses itself in its own negation, and begets from its dispersion the opposite extreme. It is doubtful if we may not transform the saying that "Everything is nothing except by position," into "Everything by position is its proper contrary, and nothing by position is all and everything."

If this is so, there would remain no quality which is simply positive; and logical negation, in another sense than we have given it above, becomes the soul and, we sometimes are inclined to think, the body of the real world. But we are not called upon to discuss this view (cf. Chap. V.), for our result will stand in any case, I think, in its principal outline.

A mere logical negation, it is fully admitted by the dialectical method, need not express a real relation. And, this being so, it seems the better course to consider it by itself as merely subjective, and to express the real implication of exclusives by an affirmative judgment, which sets forth that fact. What denial tells us is merely this, that, when *we* bring the disparate up, it is rejected. Whether what repels it is entirely independent, or whether it has itself produced or solicited what it excludes, is quite irrelevant. And it is still more irrelevant to ask the question if the first rejection is merely coquettish, and will lead in the end to a deeper surrender. This all goes beyond what denial expresses, for that, merely by itself, is not asserted beyond our minds.

The dialectical method, in its unmodified form, may be

untenable. It has, however, made a serious attempt to deal with the relation of thought to reality. We can hardly say that of those eminent writers who are sure that logic is the counterpart of things, and have never so much as asked themselves the question, if the difference and identity, with which logic operates, are existing relations between actual phenomena.

§ 15. To resume, logical negation always contradicts, but never asserts the existence of the contradictory. To say "A is not B" is merely the same as to deny that "A is B," or to assert that "A is B" is false. And, since it can not go beyond this result, a mere denial of B can never assert that the contradictory Not-B is real. The fact it does assert is the existence of an opposite incompatible quality,* either in the immediate or ultimate subject. This is the reason why the suggested A – B is contradicted; and it is only because this something else is true, that the statement A – B is rejected as false. But then this positive ground, which is the basis of negation, is not *contradictory*. It is merely disparate, opposite, incompatible. It is only *contrary*. In logical negation the denial and the fact can never be the same.

§ 16. The contradictory idea, if we take it in a merely negative form, must be banished from logic. If Not-A were solely the negation of A, it would be an assertion without a quality, and would be a denial without anything positive to serve as its ground. A something that is only not something else, is a relation that terminates in an impalpable void, a reflection thrown upon empty space. It is a mere nonentity which can not be real. And, if such were the sense of the dialectical method (as it must be confessed its detractors have had much cause to suppose), that sense would, strictly speaking, be nonsense. It is impossible for anything to be *only* Not-A. It is impossible to realize Not-A in thought. It is less than nothing, for nothing itself is not wholly negative. Nothing at least is empty thought, and that means at least my thinking emptily. Nothing means nothing else but failure. And failure is impossible unless something fails: but Not-A would be impersonal failure itself (§ 11).

Not-A must be more than a bare negation. It must

* On the nature of incompatibility see more, Chap. V.

also be positive. It is a general name for any quality which, when you make it a predicate of A, or joint predicate with A, removes A from existence. The contradictory idea is the universal idea of the discrepant or contrary. In this form it must keep its place in logic. It is a general name for any hypothetical disparate; but we must never for a moment allow ourselves to think of it as the collection of disparates.

§ 17. Denial or contradiction is not the same thing as the assertion of the contrary; but in the end it can rest on nothing else. The contrary however which denial asserts, is never explicit. In "A is not B" the disparate ground is wholly unspecified. The basis of contradiction may be the assertion A–C or A–D, C and D being contraries of B. But again it may perhaps be nothing of the sort. We may reject A–B, not in the least on the ground of A, but because A itself is excluded from reality. The ultimate real may be the subject which has some quality disparate with A–B. For contradiction rests on an undetermined contrary. It does not tell us what quality of the subject excludes the predicate. It leaves us in doubt if the subject itself is not excluded. Something there is which repels the suggestion; and that is all we know. Sokrates may be not sick because he is well, or because there is now no such thing as Sokrates.

§ 18. Between acceptance and rejection there is no middle-point, and so contradiction is always dual. There is but one Not-B. But contrary opposition is indefinitely plural. The number of qualities that are disparate or incompatible with A, can not be determined by a general rule. It is possible of course to define a contrary in some sense which will limit the use of the term; but for logical purposes this customary restriction is nothing but lumber. In logic the contrary should be simply the disparate. Nothing is gained by trying to keep up an effete tradition. If a technical distinction can not be called necessary, it is better to have done with it.

§ 19. Contradiction is thus a "subjective" process, which rests on an unnamed disparate quality. It can not claim "objective" reality; and since its base is undetermined, it is hopelessly involved in ambiguity. In "A is not B" you know indeed what it is you deny, but you do not say what it is you

affirm. It may be a quality in the nature of things which is incompatible with A, or again with B. Or again it may be either a general character of A itself which makes B impossible, or it may be some particular predicate C. That "a round square is three-cornered," or that "happiness lies in an infinite quantity," may at once be denied. We know a round square, or an infinite number, are not in accordance with the nature of things. But "virtue is quadrangular," or "is mere self-seeking," we deny again because virtue has no existence in space, and has another quality which is opposite to selfishness.

"The King of Utopia did not die on Tuesday" may be safely contradicted. And yet the denial must remain ambiguous. The ground may be that there is no such place, or it never had a king, or he still is living, or, though he is dead, yet he died on Monday. This doubtful character can never be removed from the contradiction. It is the rejection of an idea, on account of some side of real fact which is implied but occult.

§ 20. We may conclude this chapter by setting before ourselves a useful rule. I think most of us know that one can not affirm without also in effect denying something. In a complex universe the predicate you assert is certain to exclude some other quality, and this you may fairly be taken to deny. But another pitfall, if not so open, yet no less real, I think that some of us are quite unaware of. Our sober thinkers, our discreet Agnostics, our diffident admirers of the phenomenal region—I wonder if ever any of them see how they compromise themselves with that little word "*only*." How is it that they dream there is something else underneath appearance, and first suspect that what meets the eye veils something hidden? But our survey of negation has taught us the secret, that nothing in the world can ever be denied except on the strength of positive knowledge. I hardly know if I am right in introducing suggestive ideas into simple minds; but yet I must end with the rule I spoke of. We can not deny without also affirming; and it is of the very last importance, whenever we deny, to get as clear an idea as we can of the positive ground our denial rests on.

CHAPTER IV.

THE DISJUNCTIVE JUDGMENT.

§ 1. The disjunctive judgment may fairly complain that by most logicians it is hardly dealt with. It is often taken as a simple application of the hypothetical, and receives the treatment of a mere appendage. It is wonderful in how many respectable treatises not the smallest attempt is made to understand the meanings of "if" and of "either—or."

The commonest way of regarding disjunction is to take it as a combination of hypotheses. This view in itself is somewhat superficial, and it is possible even to state it incorrectly. "Either A is B or C is D" means, we are told, that if A is not B then C is D, and if C is not D then A is B. But a moment's reflection shows us that here two cases are omitted. Supposing, in the one case, that A *is* B, and supposing, in the other, that C *is* D, are we able in these cases to say nothing at all? Our "either—or" can certainly assure us that, if A is B, C–D must be false, and that, if C is D, then A–B is false. We have not exhausted the disjunctive statement, until we have provided for four possibilities, B and not-B, C and not-C.

§ 2. But however complete may be the cases supposed, disjunctive judgments can not really be reduced to hypotheticals. Their meaning, no doubt, can be given hypothetically; but we must not go on to argue from this that they *are* hypothetical. The man who illustrated everything else has touched this point too in the *Gentlemen of Verona*:

Speed. But tell me true, will't be a match?

Launce. Ask my dog: if he say, ay, it will; if he say, no, it will; if he shake his tail and say nothing, it will.

Speed. The conclusion is then that it will.

Launce. Thou shalt never get such a secret from me but by a parable (Act II. Scene v.).

It is indeed by an indirect process, and by making secret a categorical judgment, that hypotheticals can express disjunction.

I do not mean that the "either—or" is purely categorical. I mean that to some extent at least it *is* categorical, and declares a fact without any supposition. In "A *is b* or *c*" some part of the statement is quite unconditional. It asserts a fact without any "if" at all. And when pressed with the objection, "But you can not deny that it *is* reduced to a combination of supposals," we need not take long to practise an answer. A *combination* of hypotheticals surely does not lie in the hypotheticals themselves. It lies in the mind which combines them together, and surveys the field which together they exhaust. It is nonsense to say you are able to "reduce" a statement to elements of a certain character, when these elements, if taken merely by themselves and without a peculiar mode of union, are able to express nothing like the statement. The basis of disjunction, the ground and foundation of your hypotheticals, is categorical.

§ 3. There is, no doubt, some difficulty about the categorical nature of disjunctive judgments. "A is *b* or *c*;" but this mode of speech can not possibly answer to real fact. No real fact can be "either—or." It is both or one, and between the two there is nothing actual. We can hardly mean to say that in fact A *is b* or *c*. On the other hand, we are far from expressing simple ignorance. If we merely said "I do not know if A is *b*, and I do not know if A is *c*," that would not be equivalent to the original statement. And that we make an assertion can be shown in this way. If the subject of our predicate "either—or" were proved not to exist, our statement would be false. It is clear not only that the subject has existence, but that it also possesses some further quality.

The distinction of the apparent and the ultimate subject, which we had to make in our former discussions, must not here be forgotten. "A is either *b* or *c*" need not always imply that A is a fact. For example, I may say that "either A exists or does not exist." The subject here is the nature of things, and this either repels the content A or is qualified by it. But still the assertion remains categorical.

Throughout the rest of the chapter I shall take A to stand for the real subject, and the reader must remember that in every case the apparent subject may belong to the predicate, and that what is asserted respecting A may only be true of the ultimate subject.

And the same remark applies to such examples as "Either A is B or C is D." The subject in this case is not A or B or again C or D. The subject is the real, which is qualified either by the predicate A–B or the predicate C–D.

§ 4. The assertion in "A is *b* or *c*" is not that A *is b* or *c*. What then do we affirm? We say in the first place that A exists. In the next place we certainly give it some quality. What quality do we give it? If it can not be either *b* or *c*, can it possibly be something that falls between them? No, for that would be neither. For instance, grey is not white or black, and it excludes both colours. The predicate of A, while neither *b* nor *c*, must not be a quality exclusive of either. It must then be a quality common to both, which is not yet either, but is further determinable as one or the other.

§ 5. If we like to call this basis *x*, then "A is *x*" is categorically true. We may in some cases have distinguished *x* and given it a name, but in other cases it is unnamed and implicit. "Man, woman, and child," have a common basis in "human being." In "white or black" the quality "coloured, and coloured so as to exclude other hues," is the attribute asserted. "In England or America," "alive or dead," commit us to the statements "somewhere not elsewhere" and "organized being." And so, if we call a man "bad or good," we say at least he is a moral agent. There is no exception to the truth of this rule. Even existence and non-existence have so much in common that, in any sense in which we can use them, they imply some kind of contact with my mind. We have seen (Chap. III.) that there is no pure negation. So, in every disjunction and as the ground of it, there must be the assertion of a common quality, the sphere within which the disjunction is affirmed.

§ 6. But *x* is not any universal whatever which happens to be common to *b* and *c*. It is particularized further. It

excludes the opposite of each of these qualities, and can not be the negative of "*b* or *c*." It is affirmed as fully determined not outside the region which is covered by *bc*. But since *b* and *c*, as predicates of A, are incompatible, it can not be *both* of them. The conclusion remains that it must be *one*. "One single element of the region enclosed by *bc*" is the predicate common to *b* and *c*. And this predicate it is which, in disjunction, we categorically assert of A.

So much is fact and no hypothesis; but this by itself would not be the assertion "*b or c*." The disjunctive judgment is not wholly categoric. Being sure of our basis, the quality *x*, upon this universal we erect hypotheses. We know that *b* and *c* are disparate. We know that A is particularized within *b* and *c*, and therefore as one of *b* and *c*. It can not be both, and it must be some one. So much is the fact. To complete the disjunction we add the supposal, "If it is not one it must be the other." If A is not *b*, it must be *c*; and it must be *b*, if it is not *c*. This supposal completes the "either—or." Disjunctive judgment is the union of hypotheticals on a categoric basis.

§ 7. We shall return to consider this process further, but at present we may pause to correct a mistake. It has been doubted if alternatives are always exclusive. "A is *b* or *c*," it is said, may be taken to admit that A is possibly both. It may either be *bc* or *b* or *c*. And, no doubt, in our ordinary disjunctive statements we either leave the meaning to be gathered from the context, or really may not know what it is that we mean. But our slovenly habits of expression and thought are no real evidence against the exclusive character of disjunction. "A is *b* or *c*" does strictly exclude "A is both *b* and *c*." When a speaker asserts that a given person is a fool or a rogue, he may not *mean* to deny that he is both. But, having no interest in showing that he is both, being perfectly satisfied provided he is one, either *b* or *c*, the speaker has not the possibility *bc* in his mind. Ignoring it as irrelevant, he argues as if it did not exist. And thus he may practically be right in what he says, though formally his statement is downright false: for he has excluded the alternative *bc*.

And it is not always safe to be slovenly. It may be a

matter of vital moment to make our disjunction accurate and complete, and to know if we mean "A is *b* or *c*," or "A is *bc* or *b* or *c*." About the commonest mistake in metaphysics is the setting up of false alternatives. If we either admit *bc* as a predicate when *b* and *c* are disparate, or exclude *bc* when *b* and *c* are compatible, we are liable to come to most false conclusions. And the very instance we have quoted above should read us a lesson. It is false that the alternative "either rogue or fool" does never exclude the possibility of both. It is a common thing to make this mistake. When we try to guess a man's line of conduct, we first lay it down he is fool or rogue, and then afterwards, arguing that he is certainly a rogue, we conclude that his conduct will be deliberately selfish. But unfortunately the man has been a fool as well, and was not in any way to be relied on. It is often impossible to speak by the card, but still inaccuracy remains inaccuracy. And, if we do not mention the alternative "or both," when held to our words we certainly exclude it.

If we mean to say "A is *b* or *c* or again *bc*," the process of the judgment is very simple. A exists and is further determined. It is determined within the region *bc*. A excludes all qualities which are incompatible with *b* and *c* and again with *bc*. Within *bc* fall *b* and *c* and again *bc*, and nothing else falls there. And since these are disparate, A is but one of them. So far the fact, and then come the hypotheses. If A as determined excludes *b* and *c* it must be *bc*: if it excludes *c* and *bc* it is *b*: if it excludes *b* and *bc* it is *c*. The number of disparates is of course irrelevant to the nature of the process.

§ 8. But the inaccuracy we have noticed has a natural foundation. We are accustomed to use "or" with an implication, and at times we forget whether "or" stands alone or must be taken as so qualified. I will briefly illustrate. If, in drawing up a rule, I lay down that "the number of tickets being limited, each person shall be entitled to a red ticket or a white one," it is at once understood that the alternatives are incompatible. A ticket means here obviously one *at most*. But, if I say "No one shall be entitled to pass within this enclosure except the possessor of a white or red ticket," I

should hardly be taken to exclude the man who was qualified by both. A ticket means here one *at least*. And it becomes very easy to misunderstand, and to suppose that "or" in each of these cases has a different force.

But in both cases "or" means precisely the same. In the second, as in the first, it is rigidly disjunctive. But in the second of our instances "or" does not stand alone. It is qualified by an unexpressed "if not" or "failing that." And this implication makes a vital difference.

§ 9. The alternatives which are offered are *not* red and white. I am not to be admitted, given white *or* red. The entitling conditions (so far as they are contemplated) are firstly "white," and then "red, white failing" or "red without white;" and it can hardly be maintained that *these* conditions are compatible. For, if white is there, then red can not make good the failure of white, and the red, that is specified as excluding white, can not by any means admit its presence. What you mean to say is, Suppose white is there, then *cadit quæstio;* but, if white is not there, red will answer the purpose. And you express your meaning by assigning two alternatives, "white present" on the one hand, and, on the other hand, "red coupled with the absence of white." And this *practically* provides for every possibility.

The logical objection which may be raised against it is not that its "or" is partly conjunctive, for this, as we have seen, is a pure mistake. The disjunction is faulty not because it is conjunctive, but because it is incomplete. It ignores the possibility of the co-existence of red and white, and in form it might be construed as excluding it. But the reason is obvious. You are never forced to consider separately this individual possibility, since you can always treat it as a simple case of the presence of white. If "white" really means "white with or without red," and "red" means "red on the failure of white," and if the absence of both is fully provided for, then the disjunction is absolutely complete and exhaustive. And these alternatives (i) white with or without red, (ii) red without white, and (iii) failure of both, are absolutely incompatible.

§ 10. And this I think is the answer to an argument

brought forward by Professor Jevons (*Principles*, p. 73). Against the exclusive character of alternatives he urges an indirect argument. If that were so, he objects, the negative of such a term as "malleable-dense-metal" could not be "not-malleable or not-dense or not-metallic." There would be seven distinct alternatives, and this would be absurd.

I must remark, in the first place, that I wholly fail to see the absurdity. If you mean to exhaust the cases which exclude the term "malleable-dense-metal," the absurdity would lie in their number being less than what follows from the number of possible combinations. But if you mean to say that, if "or" is exclusive, you can not deny the term which is offered unless you set out *all* the cases which exclude it, then this is just the mistake we have been considering. In "not-malleable or not-dense or not-metallic" the disjoined are incompatible, but the full possibilities are not set out. You must understand with each "or" the implication of "failing that." "Not malleable" does not mean the *isolated* presence of non-malleability. It is not *one* possibility: it is a class that covers several. It means the absence of malleability, whether the subject is metallic or not-metallic, dense or not-dense. You may fairly object that combinations are ignored, or else that the term "not-malleable" is ambiguous, since it is used to cover a number of cases. But these technical objections would have little importance, and they do nothing to show that "or" does anything but rigidly disjoin.

§ 11. Despite my respect for Professor Jevons, I can not admit any possible instance in which alternatives are not exclusive. I confess I should despair of human language, if such distinctions as separate "and" from "or" could be broken down. And, when I examine the further evidence produced, it either turns on the inaccurate modes of expression we have lately discussed, or consists in what I must be allowed to call a most simple confusion. We are told that the expressions "wreath or anadem," or again "unstain'd by gold or fee" (Jevons, p. 70), show that "or" may sometimes be non-exclusive. But this is quite erroneous. The alternatives are meant to be rigidly incompatible. The distinction is however not applied to the thing, but simply to the names. If we

suppose that the terms are quite synonymous, then "wreath or anadem" means "you may call it by either name you please." The thing has two titles, one of which is at your service. I hardly think Professor Jevons would assert that we are asked to use *both names at once.* So, if "fee" is not meant to be distinct from "gold," the assertion is that there is no stain arising from the thing you may term indifferently gold or fee. The idea of your wanting to say both at once is quite ignored.

I will try to make the matter clearer by inventing a piece of imaginary dialogue. A. Who is the greatest Roman poet? B. His name is Virgil. A. What, not Vergilius? B. Yes, Virgil or Vergilius. A. I understand: he has two names. I will call him henceforth "Vergilius-Virgil," and then I shall be safe. B. Excuse me: in that case you must be wrong. You may call him by either of the names you please, but not by both of them at once.

It is not worth while to multiply illustrations. In every instance that can be produced, we have either a loose mode of common speech, or else the "or" denotes incompatibility, whether that lie in the simultaneous use of alternative names, or in the facts themselves.

§ 12. The mere statement, of course, may fail to tell us which of these incompatibilities is before us. And no one can deny that alternatives are often presented in a very inaccurate way. It is an excellent thing in all these questions to refer to the common usages of language, but we must remember that in those usages, besides what one calls "unconscious logic," there also may lurk mere looseness and carelessness. It may not be amiss to illustrate the mistake we have just been discussing, by a parallel ambiguity in the hypothetical judgment. It is, of course, the established doctrine that, while you may argue from ground to consequence, you can not demonstrate from consequence to ground. And, although from a metaphysical point of view this doctrine is certainly open to doubt, still for logical purposes it is sufficiently valid. But yet, by appealing to loose expressions, we might show that the ground is the *only* ground, and can therefore be inferred from the presence of the conse-

quence. Sigwart has called attention to these cases (*Logik*, I. 243; and *Beiträge*, 59.). "If you run hard you will catch him," is often an indirect way of saying, "You will not catch him *unless* you run hard." But such mere loose phrases are no valid reason for impugning the doctrine that, unless this fact is specially stated, the condition is not given as a *sine qua non*. When the context shows that our expressions are not to be strictly interpreted, we are at liberty to take "either—or" as compatible, and "if" may be the same as "not unless." But we should remember that what a thing can pass for may differ widely from what it really *is*.

§ 13. It is time we left these misleading errors to return to the discussion of the matter itself. The detail of the process in disjunctive judgments can not fully be dealt with till we come to inference. But here we may partly prepare the ground.

In the first place, as we shall see in the following chapter, disjunction does not rest on Excluded Middle. The latter is merely a case of disjunction.

"A is *b* or *c*" asserts, as we saw, that A exists and possesses a quality. That quality, further, falls within *bc*. It is affirmed to be what is common to both, and it is stated also to be further determinable within *bc*. In other words, it excludes all disparates of both *b* and *c*.

We have seen this above, and the point I wish here to bring forward is the following. How do we know, and how can we know, that there is not a disparate of *bc* and which is compatible with A? All rests upon this; and what does this rest on?

We must answer, for the present, that it rests on our impotence. There is no great principle on which we can stand. We can not find any opposite of *b* or opposite of *c* which is not also an opposite of A; and we boldly assume that, because we find none, therefore there is none. The conclusion from impotence may itself seem impotent, but, as we shall hereafter see, there remains some doubt if it may not in the end be taken as the ground and the sole ground we have for believing anything (Book III. II. Chapter III).

§ 14. We may state the whole matter once more thus.

"A is *b* or *c*" may be expressed by (i) If A is *b* it is not *c*, and If A is *c* it is not *b*, (ii) If A is not *b* then it is *c*, and If A is not *c* then it must be *b*. The first two hypothetical statements are erected on the knowledge that *b* and *c* as predicates of A are incompatible, or that A*bc* can not possibly exist.

The second pair are based on the assumption that, because we do not find a predicate of A which excludes *b* or *c*, therefore there is none. Every opposite of *b* or of *c*, that we find, is an opposite of A. Hence there remains this result; within the limit of A there is no not-*b* but *c*, and no not-*c* but *b*: and A must have some further quality. This is the ground for our second two hypotheticals.

So we see the essence of disjunctive judgment is not got by calling it a combination of supposals. It has a distinctive character of its own. It first takes a predicate known within limits, and defined by exclusion, and then further defines it by hypothetical exclusion. It rests on the assumption that we have the whole field, and by removing parts can determine the residue. It supposes in short a kind of omniscience. Its assertion again, if not quite categorical, is certainly not quite hypothetical. It involves both these elements. And it implies, in addition, a process of inference which will give us cause for reflection in the future.

CHAPTER V.

THE PRINCIPLES OF IDENTITY, CONTRADICTION, EXCLUDED MIDDLE, AND DOUBLE NEGATION.

§ 1. After discussing negative and disjunctive judgments, we may deal at once with the so-called "Principles" of Identity, Contradiction, and Excluded Middle; and we will add some remarks on Double Negation.

The principle of Identity is often stated in the form of a tautology, "A is A." If this really means that no difference exists on the two sides of the judgment, we may dismiss it at once. It is no judgment at all. As Hegel tells us, it sins against the very form of judgment; for, while professing to say something, it really says nothing. It does not even assert identity. For identity without difference is nothing at all. It takes two to make the same, and the least we can have is some change of event in a self-same thing, or the return to that thing from some suggested difference. For, otherwise, to say "It is the same as itself" would be quite unmeaning. We could not even have the appearance of judgment in "A is A," if we had not at least the difference of position in the different A's; and we can not have the reality of judgment, unless some difference actually enters into the content of what we assert.

§ 2. We never at any time wish to use tautologies. No one is so foolish in ordinary life as to try to assert without some difference. We say indeed "I am myself," and "Man is man and master of his fate." But such sayings as these are no tautologies. They emphasize an attribute of the subject which some consideration, or passing change, may have threatened to obscure; and to understand them rightly we must always supply "for all that," "notwithstanding," or again, "once more." It is a mere mistake to confuse what Kant calls

"analytical judgments"* with tautologous statements. In the former the predicate is part of the content of the conception A, which stands in the place of, and appears as, the subject. But in every judgment of every kind a synthesis is asserted. The synthesis in Kant's analytical judgment holds good within the sphere of the conception; and the real subject is not the whole of A, but is certain other attributes of A which are *not* the attribute asserted in the predicate. In "All bodies are extended" what we mean to assert is the connection, within the subject "bodies," of extension with some other property of bodies. And even if "extended" and "body" were synonymous, we still might be very far from tautology. As against some incompatible suggestion, we might mean to assert that, after all misapprehension and improper treatment, the extended is none the less the extended. And, again, we might be making a real assertion of a verbal nature. We might mean that, despite their difference as words, the meaning of "body" and "extended" was the same. But mere tautology with deliberate purpose we never commit. Every judgment is essentially synthetical.

§ 3. The axiom of Identity, if we take it in the sense of a principle of tautology, is no more than the explicit statement of an error. And the question is, would it not be better to banish irrevocably from the field of logic such a source of mistake? If the axiom of Identity is not just as much an axiom of Difference, then, whatever shape we like to give it, it is not a principle of analytical judgments or of any other judgments at all. On the other hand, perhaps something may be gained if a traditional form can get a meaning which conveys vital truth. Let us try to interpret the principle of Identity in such a way that it may really be an axiom.

§ 4. We might take it to mean that in every judgment we assert the identity of subject and predicate. Every connection of elements we affirm, in short all relations and every difference, holds good only within a whole of fact. All attributes imply the identity of a subject. And taken in this sense the principle of Identity would certainly be true. But this

* This is not the sense in which I have used "analytical." p. 48.

perhaps is not the meaning which, for logical purposes, it is best to mark specially.

§ 5. There remains a most important principle which, whether it be true or open to criticism, is at least the *sine qua non* of inference. And we can not do better than give this the name of principle of Identity, since its essence is to emphasize sameness in despite of difference. What is this principle? It runs thus: "Truth is at all times true," or, "Once true always true, once false always false. Truth is not only independent of me, but it does not depend upon change and chance. No alteration in space or time, no possible difference of any event or context, can make truth falsehood. If that which I say is really true, then it stands for ever."

So stated the principle is not very clear, but perhaps it will find acceptance with most readers. What it means, however, is much more definite, and will be much less welcome. The real axiom of Identity is this: *What is true in one context is true in another.* Or, If any truth is stated so that a change in events will make it false, then it is not a genuine truth at all.

§ 6. To most readers this axiom, I have little doubt, will seem a false statement. For the present it may stand to serve as a test if our previous discussions (Chap. II.) have been understood. If every judgment in the end is hypothetical, except those not directly concerned with phenomena—if each merely asserts a connection of adjectives, in this sense that *given* A then B must follow—we see at once that under any conditions they will always be true. And we shall see hereafter that in every inference this result is assumed as a principle of reasoning, and that we can not argue one step without it.

§ 7. We saw that such judgments as "I have a toothache," in their sensuous form, are not really true. They fail and come short of categorical truth, and they hardly have attained to hypothetical. To make them true we should have to give the conditions of the toothache, in such a way that the connection would hold beyond the present case. When the judgment gave the toothache as the consequent coming according to law from the ground, when the judgment had thus become universal, and, becoming this, had become hypo-

thetical, then at last it would be really true, and its truth would be unconditional and eternal.

I know how absurd such a statement sounds. It is impossible, I admit, however much we believe it, not to find it in a certain respect ridiculous. That I do not complain of, for it is not our fault. But it is our fault if the common view does not seem *more* ridiculous. I say that "I have a toothache" to-day. It is gone to-morrow. Has my former judgment become therefore false? The popular view would loudly protest that it still is true, for I *had* a toothache, and the judgment now holds good of the past. But what that comes to is simply this. The judgment is true because answering to fact. The fact alters so that it does not answer; and yet the judgment is still called true, because of something that does not exist. Can anything be more inconsistent and absurd? If the change of circumstance and change of day is not a fresh context which falsifies *this* truth, why should any change of context falsify *any* truth? And if changed conditions make any truth false, why should not all truth be in perpetual flux, and be true or false with the fashion of the moment?

§ 8. We shall discuss this question more fully hereafter (Bk. II. Part I.), but may here anticipate a misunderstanding. To ask "Does space or time make no difference" is wholly to ignore the meaning of our principle. We ask in reply, Does this difference enter into the content of A? If it does, then A becomes *perceptibly* diverse, and we confessedly have left the sphere of our principle. But, if it does not so enter, then the truth of A is considered in abstraction from spaces and times, and their differences are confessedly irrelevant to its truth. We thus meet the objection by offering a dilemma. You have abstracted from the differences of space and time, or you have not done so. In the latter case your subject itself is different; in the former case it is you yourself who have excluded the difference.

We may indeed on the other side be assailed with an objection. We may be asked, "What now has become of the identity? Has it not disappeared together with the differences? For if the different contexts are not allowed to enter into the subject, how then can we say what is true in one con-

text is true in another? It will not be true in any context at all." But we answer, The identity is not contained *in* the judgment "S–P," since that takes no kind of account of the differences. The identity lies in the judgment, "S–P is true everywhere and always." It is this "everywhere" and "always" that supply the difference against which S–P becomes an identity. The predicate attributed to the real belongs to it despite the difference of its diverse appearances. We do not say the appearances are always the same, but the quality keeps its nature throughout the appearances. And with this reply we must here content ourselves.

§ 9. When we come to discuss the nature of inference we shall see more fully the bearing of the principle. It stands here on the result of our former enquiries, that every judgment, if it really is true, asserts some quality of that ultimate real which is not altered by the flux of events. This is not the place for metaphysical discussion, or we might be tempted to ask if identity was not implied in our view of the real. For if anything is individual it is self-same throughout, and in all diversity must maintain its character.

THE PRINCIPLE OF CONTRADICTION.

§ 10. Like the principle of Identity, the principle of Contradiction has been often misunderstood. And in the end it must always touch on a field of metaphysical debate. But, for logical purposes, I think it is easy to formulate it in a satisfactory way.

It is necessary before all things to bear in mind that the axiom does not in any way explain, that it can not and must not attempt to account for the existence of opposites. That disparates or incompatibles or contraries exist, is the fact it is based on. It takes for granted the nature of things in which certain elements are exclusive of others, and it gives not the smallest reason for the world being such in nature and not quite otherwise. If we ever forget this, the Law of Contradiction will become a copious source of illusion.

§ 11. If the principle of Contradiction states a fact, it says no more than that the disparate is disparate, that the exclusive,

despite all attempts to persuade it, remains incompatible. Again, if we take it as laying down a rule, all it says is, "Do not try to combine in thought what is really contrary. When you add any quality to any subject, do not treat the subject as if it were not altered. When you add a quality, which not only removes the subject as it was, but removes it altogether, then do not treat it as if it remained." This is all the meaning it is safe to give to the axiom of Contradiction; and this meaning, I think, will at once be clear, if we bear in mind our former discussions. The contrary is always the base of the contradictory, and the latter is the general idea of the contrary. Not-A for example is any and every possible contrary of A (Chap. III. § 16).

§ 12. We have to avoid, in dealing with Contradiction, the same mistake that we found had obscured the nature of Identity. We there were told to produce tautologies, and here we are by certain persons forbidden to produce anything else. "A is not not-A" may be taken to mean that A can be nothing but what is simply A. This is, once again, the erroneous assertion of mere abstract identity without any difference. It is ordering us to deny as a quality of A everything that is *different* from A, and in this sense not-A. But differents and disparates should never be confused. The former do not exclude one another; they only exclude the denial of their difference. The disparate of A can never be found together with A in any possible subject, or be joined to it in the relation of subject and attribute. The different from A does not exclude, unless you attempt to identify it with A. It is not A generally, but one single relation to A, which it repels.

As we saw before, there is no logical principle which will tell us what qualities are really disparate. Metaphysics, indeed, must ask itself the question if any further account can be given of incompatibility. It must recognize the problem, if it can not solve it. We might remark that no thing excludes any other so long as they are able to remain side by side, that incompatibility begins when you occupy the same area; and we might be tempted to conclude that in space would be found the key of our puzzle. But such other experiences as that assertion and denial, or pain and pleasure, are incom-

patible, would soon force us to see that our explanation is insufficient. But in logic we are not called upon to discuss the principle but rest upon the fact. Certain elements we find *are* incompatible; and, where they are so, we must treat them as such.

§ 13. There is no real question of principle involved in such different ways of stating the axiom as "A is not not-A," "A is not both *b* and not-*b*," "A can not at once both be and not be." For if A were not-A, it would be so because it had some quality contrary to A. So also, if A has a quality *b*, it could only be not-*b* by virtue of a quality disparate with *b*. And again, if A both were and were not, that would be because the ultimate reality had contrary qualities. The character in which it accepted A, would be opposite to the quality which excluded A from existence. Under varieties of detail we find the same basis, repulsion of disparates.

A simple method of stating the principle is to say, "Denial and affirmation of the self-same judgment is wholly inadmissible." And this does not mean that if a miracle in psychology were brought about, and the mind did judge both affirmatively and negatively, both judgments might be true. It means that, if at once you affirm and deny, you must be speaking falsely. For denial asserts the positive contrary of affirmation. In the nature of things (this is what it all comes to) there are certain elements which either can not be conjoined at all, or can not be conjoined in some special way; and the nature of things must be respected by logic.

§ 14. If we wish to show that our axiom is only the other side of the Law of Identity, we may state it thus, "Truth is unchangeable, and, as disparate assertions alter one another, they can not be true." And again, if we desire to glance in passing at the metaphysical side of the matter, we may remind ourselves that the real is individual, and the individual is harmonious and self-consistent. It does not fly apart, as it would if its qualities were internally discrepant.

§ 15. Having now said all that I desire to say, I would gladly pass on. For, notwithstanding the metaphysics into which we have dipped, I am anxious to keep logic, so far as is possible, clear of first principles. But in the present instance

the law of Contradiction has had the misfortune to be flatly denied from a certain theory of the nature of things. So far is that law (it has been contended) from being the truth, that in the nature of things contradiction exists. It is the fact that opposites are conjoined, and they are to be found as disparate moments of a single identity.

I need hardly say that it is not my intention compendiously to dispose in a single paragraph of a system which, with all its shortcomings, has been worked over as wide an area of experience as any system offered in its place. My one idea here is to disarm opposition to the axiom of contradiction, as it stands above. But I clearly recognize that, if not-A were taken as a pure negation, no compromise would be possible. You would then have to choose between the axiom of contradiction and the dialectical method.

I will say, in the first place, that whatever is conjoined is therefore *ipso facto* shown not to be disparate. If the elements co-exist, *cadit quæstio:* there is no contradiction, for there can be no contraries. And, saying so much, I feel tempted to retire. But yet with so much I shall hardly escape. "Have not we got," I hear the words called after me, "have we not got elements which any one can see negate one another, so that, while one is, the other can not be; and yet have we not got very many conceptions in which these discrepants somehow co-exist? It is all very well to say, 'then not contrary;' but try them, and see if they are not exclusive."

It is plain that I must stand and say something in reply. But I think I shall hardly be so foolish as to answer, "These conceptions of yours are merely phenomenal. Come to us and learn that knowledge is relative, and with us give up the Thing-in-itself." For without knowing all that would be poured on my head, I can guess some part of what I should provoke. "*You* say 'give up the Thing-in-itself'? Why that is all that you have *not* given up. You profess that your knowledge is only phenomenal, and then you make the law of Contradiction valid of the Absolute, so that what it excludes you are able to know is *not* the Absolute. That is surely inconsistent. And then, for the sake of saving from contradiction this

wretched ghost of a Thing-in-itself, you are ready to plunge the whole world of phenomena, everything you know or can know, into utter confusion. You are willing to turn every fact into nonsense, so long as this Thing-in-itself is saved. It is plain, then, for which you really care most. And as for 'relativity,' it is you yourselves who violate that principle. Your turning of the relative into hard and fast contraries is just what has brought you to your miserable pass." I confess I should hardly care to subject myself to all these insults ; and I had rather Mr. Spencer, or some other great authority—whoever may feel himself able to bear them, or unable to understand them—should take them on himself.

If I chose to turn and provoke a contest, I know of another weapon I might use. I might say, "Your conceptions are partial illusions. They are crude popular modes of representing a reality whose nature can not be so pourtrayed And the business of philosophy is to purify these ideas, and never to leave them until, by removal of their contradictions, they are made quite adequate to the actual fact." But, after all, perhaps I could only say this for the sake of controversy, and controversy is what I am anxious to avoid. And for this end I think that some compromise may perhaps be come to. Without calling in question the reality of negation, and the identity of opposites, are we sure that we can not understand that doctrine in a sense which will bear with the axiom of Contradiction ? This axiom is not like the principle of Identity. It is a very old and most harmless veteran ; and for myself I should never have the heart to attack it, unless with a view to astonish common-sense and petrify my enemies. And in metaphysics we can always do that in many other ways.

What I mean is this. Supposing that, in such a case as continuity, we seem to find contradictions united, and A to be *b* and not-*b* at once, this may yet be reconciled with the axiom of Contradiction. A we say is composed of *b* and not-*b* ; for, dissecting A, we arrive at these elements, and, uniting these, we get A once more. But the question is, while these elements are *in* A, can they be said, while there, to exist in their fully disparate character of *b* and not-*b* ? I do not mean to suggest that the union of contraries may be that misunder-

standing of the fact which is our only way to understand it. For, if I felt sure myself that this were true, I know it is a heresy too painful to be borne. But, in the object and within the whole, the truth may be that we never really do have these disparates. We only have moments which *would be* incompatible if they really were separate, but, conjoined together, have been subdued into something within the character of the whole. If we so can understand the identity of opposites—and I am not sure that we may not do so—then the law of Contradiction flourishes untouched. If, in coming into one, the contraries as such no longer exist, then where is the contradiction?

But, I fear, I shall be told that the struggle of negatives is the soul of the world, and that it is precisely *because* of their identity that we have their contradiction. It is true that the opposition which for ever breaks out leads to higher unity in which it is resolved; but still the process of negation is there. It is one side of the world which can not be got rid of, and it is irreconcileable with the non-existence of disparates in a single subject. Each element of the whole, without the other, is incompatible with itself; but it is none the less incompatible with the other, which for ever it produces or rather becomes.

I am after all not quite convinced. If the law of Contradiction is objected against because, in isolating and fixing the disparate, it becomes one-sided, is it not quite possible that, in denying the law, we have become one-sided in another way? If the negation itself, while negative on one side, is on the other side the return from itself to a higher harmony—if, that is to say, the elements are not disparate without each at once, by virtue of its disparateness and so far as it is disparate, thereby *ipso facto* ceasing to be disparate, then surely, in denying the law of Contradiction, we ourselves have fixed one side of the process, and have treated the contrary as simply contrary. The contrary which the law has got in its head, is the contrary that entirely kills its opposite, and remains triumphant on the field of battle. It is not the contrary whose blows are suicidal, and whose defeat must always be the doom of its adversary. It is incompatibles fixed as such, it is disparates which wholly exclude one another and have no other side, that the axiom

speaks of. But dialectical contraries are only partially contrary and it is *our* mistake if we keep back the other side. And if an opponent of the law reminds me that the existence of these two sides within one element is just the contradiction, that in the *b* which is contrary to not-*b* the implication of not-*b* makes it self-contradictory, then I must be allowed to say in reply that I think my objector has not learnt his lesson. The not-*b* in *b* is itself self-disparate, and is just as much *b:* and so on for ever. We never have a mere one-sided contrary.

But it is one-sided and stationary contraries that the axiom contemplates. It says that they are found, and no sober man could contend that they are not found. No one ever did maintain that the dialectical implication of opposites could be set going in the case of every conjunction that we deny. It can hardly be maintained that there *are* no disparates, except these contraries which at the same time imply each other. And the law of Contradiction does not say any more than that, when such sheer incompatibles are found, we must not conjoin them.

Its claims, if we consider them, are so absurdly feeble, it is itself so weak and perfectly inoffensive, that it can not quarrel, for it has not a tooth with which to bite any one. The controversy, first as to our actual ability to think in the way recommended by Hegel, and secondly as to the extent to which his dialectic is found in fact, can not only *not* be settled by an appeal to the axiom, but falls entirely outside its sphere. Starting from the fact of the absolute refusal of certain elements to come together, and wholly dependent upon that fact, so soon as these elements do come together the axiom ceases forthwith to be applicable. It is based upon the self-consistency of the real, but it has no right to represent that consistency except as against one kind of discrepancy. So that, if we conclude that the dialectic of the real would in the end destroy its unity, that has nothing to do with the axiom of Contradiction. Like every other question of the kind, the validity of dialectic is a question of fact, to be discussed and settled upon its own merits, and not by an appeal to so-called "principles." And I think I may venture to hazard the remark, that one

must not not first take up from uncritical views certain elements in the form of incompatible disparates, and then, because we find they are conjoined, fling out against the laws of Contradiction and Excluded Middle. They, such as they are, can be no one's enemy ; and since no one in the end can perhaps disbelieve in them, it is better on all accounts to let them alone.

PRINCIPLE OF EXCLUDED MIDDLE.

§ 16. The axiom that every possible judgment must be true or false, we shall see is based on what may be called a principle. It is however doubtful if the axiom itself should receive that title, since it comes under the head of disjunctive judgment. We must not imagine that our axiom supplies the principle of disjunction. It is nerely one instance and application of that principle.

§ 17. If we recall the character of the disjunctive judgment, we shall remember that there we had a real, known to be further determined. Its quality fell (i) within a certain area ; and (ii) since that area was a region of disparates, the real was determined as one single member. On this basis we erected our hypotheticals, and so the "either—or" was completed.

Excluded Middle shows all these characteristics. In it we affirm (i) that any subject A, when the relation to any quality is suggested, is determined at once with respect to that predicate within the area of position and negation, and by no relation which is incompatible with both. And (ii) we assert that, within this area, the subject is qualified as one single member And then we proceed to our "either—or."

§ 18. Excluded Middle is one case of disjunction: it can not be considered co-extensive with it. Its dual and contradictory alternative rests on the existence of contrary opposites. The existence of exclusives without reference to their number is the ground of disjunction, and the special case of assertion and denial is developed from that basis in the way in which contradiction is developed from exclusion. Common disparate disjunction is the base, and the dual alternative of *b* and not-*b* rests entirely upon this.

§ 19. Excluded Middle is one kind of disjunction: and we

must proceed to investigate the nature of that kind. (i) Disjunction asserts a common quality. In "*b* or not-*b*" the common quality asserted of A is that of general relation to *b*. (ii) Disjunction asserts an area of incompatibles. Affirmation or denial of *b* is here the area within which A falls. The evidence that it does not fall outside and that all the disparates are completely given, may be called my impotence to find any other. (iii) Disjunction attributes to the subject A one single element of the area. And this part of the process does not call here for any special remark.

§ 20. We find however, when we investigate further, a point in which the axiom of Excluded Middle goes beyond the limits of disjunctive judgment. It contains a further principle, since it asserts a common quality of all possible existence. It says, Every real has got a character which determines it in judgment with reference to every possible predicate. That character furnishes the ground of some judgment in respect of every suggested relation to every object. Or, to put the same more generally still, Every element of the Cosmos possesses a quality, which can determine it logically in relation to every other element.

§ 21. This principle is prior to the actual disjunction. It says beforehand that there is a ground of relation, though it does not know what the relation is. The disjunction proceeds from the further result that the relation falls within a disparate sphere. We thus see that, on the one hand, Excluded Middle transcends disjunction, since it possesses a self-determining principle which disjunction has not got. On the other hand, in its further developement, it is nothing whatever but a case of disjunction, and must wait for the sphere of disparate predicates to be *given it as a fact.*

§ 22. The disjunction is completed by the fact that, when any predicate is suggested, the quality of every element is a ground of either the affirmation or the denial of the predicate. It compels us to one and to one alone; for no other alternative can possibly be found.

And here the opposition, directed before against the axiom of Contradiction, must again be confronted. It is false, we are told, that A must either be *c* or not-*c*. We have often to

say "both," and sometimes "neither." But I think perhaps the discussion at the end of the foregoing chapter will have strengthened us to persist. I fully admit that often, when challenged to reply Yes or No, it is necessary to answer "Yes *and* No" or "Neither." But, I venture to think, that is always because the question is ambiguous, and is asked from the standpoint of a false alternative. "Is motion continuous? Yes or no." I decline to answer until you tell me if, by saying Yes, I am taken to deny that it is *also* discrete. In that case perhaps, instead of saying Yes, I should go so far as to answer No. There may be a middle between continuity and discretion; there can be none between continuous and not-continuous.

The ground of the objection to the Excluded Middle is, I am bold enough to think, fallacious. Given not fixed disparates but dialectical opposites, the existence of these together in one single subject does not give us the right to a negative judgment. One can not be made use of as the positive ground on which to build the denial of the other. One does not wholly remove the other, and, failing to do so, it is not qualified as a logical contrary. For it is only the disparate which destroys its opposite that can serve as the base of a negative judgment. And, failing the denial of one quality through the other, the answer must be that both are present, and the denial of either is wholly excluded. But I fear it is hard altogether on this point to effect a compromise. If the negative of *b* is ever simply not-*b*, and if this is the other which is implicated with *b* in one subject A, then I grant the Excluded Middle disappears. But, I think, in this case it will carry along with it enough to ruin what is left behind. And I must leave the matter so.

§ 23. The Excluded Middle, as we saw before, is a peculiar case of the disjunctive judgment; and I think this insight may serve us further to dispel some illusions which have gathered round it.

In the first place we must not think it is a formula, by applying which we can magically conjure elements of knowledge from the unknown deep. It is nonsense to say that it gives us a revelation that any subject must have one of two predicates. For, even if we do not make a logical mistake

and really have got contradictory qualities, that is still not the right way to put the matter. Denial is not the predication of a contradictory; and all that Excluded Middle tells us is that, given any possible element of knowledge, you must be right in either affirming or denying any suggestion that is made about that.

We learnt, in our chapter on the Disjunctive Judgment, that this judgment must assume the existence of its subject, though that subject may not be the grammatical subject. And when, in the case of Excluded Middle, we are told it will guarantee us the truth of either *b* or not-*b* as a predicate of A, we naturally ask, "But what guarantees to us the existence of A?" And we get no answer. Things in themselves either are *b* or are not *b*. Undoubtedly so, but *what is the real subject of this statement?* It perhaps after all is not "Things-in-themselves," but is ultimate reality, which may totally reject the whole offered synthesis. In this case we shall at once be able to say that Things-in-themselves are not anything at all in the real world, though, considered as illusions, they no doubt have qualities. On the other hand, if Things-in-themselves *are* taken as such to have existence, then that is not proved by our Excluded Middle, but is a sheer assumption on which we base it and which it presupposes.

§ 24. But when we are told, "Between the true and the false there is a third possibility, the Unmeaning" (Mill, *Logic*, II. vii. § 4), we must answer, "Yes, an unmeaning possibility, and therefore none at all." The doctrine that propositions need neither be true nor yet be false because they may be senseless, would introduce, I agree, "a large qualification" into the doctrine of the Excluded Middle. But I am inclined to think that this "qualification" might be larger than it seems to be, and might be operative perhaps beyond the limits so sparingly assigned to it. But surely, on the one hand, it is clear that a proposition which has no meaning is no proposition; and surely again, on the other hand, it is clear that, if it does mean anything, it is either true or else false. And when a predicate is really known *not* to be "one which can in any intelligible sense be attributed to the subject"—is not that itself ground enough for denial? But

logicians who actually (Mill, *loc. cit.*) are ready to take divisible finitely and divisible infinitely as *contradictories*, are justified in expecting extraordinary events. Suppose these terms to be absolutely disparate, that would hardly bring them under Excluded Middle, unless we are prepared to formulate the axiom thus: Whenever predicates are incompatible, then, although there be *three or more* possibilities, it is certain that one of *these two* possibilities must always be true. But perhaps this "qualification" might tend to create more difficulties than it solves.

§ 25. If we turn from these somewhat elementary mistakes, and consider the amount of actual knowledge vouchsafed to us by the Excluded Middle, I hardly think we shall be much puffed up. We must remember that, even if we are able to assert about such a subject as Things-in-themselves, we must always be on our guard against an error. We may be affirming about the meaning of a word, or about a mere idea in our heads, and may confuse these facts with another kind of fact (p. 41). But, even supposing we keep quite clear of this mistake, yet when we come to negative judgments there is ambiguity, unavoidable and ceaseless, about the positive ground of the denial. We may penetrate so far into hidden mysteries as perhaps to be privileged solemnly to avouch that Things-in-themselves are not three-cornered, nor coloured rose-red, nor pock-marked nor dyspeptic. But what does this tell us? What more should we know, if we spent our breath and wasted our days in endless denials of senseless suggestions? If the ground of negation remains the same, each particular denial asserts nothing in particular (Chap. III. pp. 116, 120).

§ 26. Confined to its limits the Excluded Middle is rigidly true. But you may easily assert it in a shape which would exhibit a parallel falsehood to those we considered in examining the Principles of Identity and Contradiction. "Everything," we might say, "is either simply the same as any other, or else has nothing whatever to do with it."

Once again, in conclusion, I must call attention to the positive principle which underlies the Excluded Middle. We assume that every element of knowledge can stand in some

relation with every other element. And we may give this, if we please, a metaphysical turn, though in doing so we go beyond the equivalent of the Excluded Middle. We may say, If the real is harmonious and individual, it must exist in its members and must inter-relate them.

§ 27. I may notice by way of appendix to this subject a somewhat subtle argument of Professor Jevons, which I regret to state I am unable to understand. He argues* that to say "A = B or b" must be incorrect. For the negative of "B or b" will be Bb, and by consequence a, the negative of A, must itself be Bb. And the objection to this is that Bb = 0. But because "every term has its negative in thought," therefore the negative of A can not be = 0, and the premise "A = B or b" is thus indirectly proved false. Professor Jevons proceeds to draw from this a general conclusion that any judgment, in the form "A = B or b," is necessarily erroneous, and that we must write instead of it "A = AB or Ab."

Though I fully agree with this last result, yet Professor Jevons' reasoning, as I understand it, appears to me unsound, and I can not reconcile his conclusion with his process. I will take the latter point first. It appears to be right to judge "A = AB or Ab." But what is the negative? I suppose the negative is AbB, and we must conclude that a = AbB. But the term AbB most clearly = 0. So that, after all, we are left with a conclusion which proves the falsity of our premise.

The result is thus out of harmony with the argument, but for all that the result is perfectly true. It *is* true that we can not say "A = B or b," and I will proceed to show *why* this must be true. We must take it that A has a determinate quality; but what is *merely* B or b is anything whatever. Bb being nothing, what is simply not-Bb will therefore be anything. And, as A is something definite, "A = anything" will of course be false. The sphere "B or b" is wholly unlimited.

This confirms the doctrine we have above adopted (p. 118). If you take not-B as the bare and simple negation of B, it is nothing at all. And if you keep to this sense, then "A =

* *Principles*, p. 74. For the meaning of Professor Jevons' symbols I must refer to his work.

not-B" could not be true. The true meaning of not-B is any indefinite general quality which does exclude B. And, so long as A is something definite, A can not be this. I am inclined to think from the presence of x (*Principles*, pp. 94, 95) that Professor Jevons would agree with this doctrine.

But the conclusion, which Professor Jevons uses as false, is not only quite true, but is the necessary result of the true doctrine he accepts. Taking A as the genuine subject that lies at the base of the disjunction, then "a = nothing" must follow at once, since "A is B or not-B" does assume and postulate that A is real. If a were anything *but* non-existent, you could not use A as the base of a disjunction. What is wrong is not this conclusion or its premises, but the mistaken idea about the negative which Professor Jevons has embraced.

I confess I am not sure if I apprehend him rightly, but he seems to argue that the non-existent is not thinkable, and hence, because the negative of everything is thinkable, you must never have a negative which is non-existent. Now I admit that, if "existence" is used in the widest possible sense, this argument is tenable. The unreal, the impossible, and the non-existent will every one of them exist, provided they are thinkable. And, since even nothing itself in this sense exists, it is obvious the whole argument thus disappears.

But, if it does not disappear, and if existence be taken in anything like the sense of reality, the argument becomes vicious. We have no right to assume that the contradictory of an idea which is true, must itself be real. Take for instance the idea of "reality" itself. I could not even admit that in thought all ideas are qualified by their negations. I should doubt if the highest term we arrive at can be said to have an opposite even in thought, although by an error we are given to think so. But to hold that what contradicts the real must be real, is a logical mistake which I cannot venture to attribute to Prof. Jevons.

I may end with the remark that it would be entertaining and an irony of fate, if the school of "experience" fell into the cardinal mistake of Hegel. Prof. Bain's "Law of Relativity," approved by J. S. Mill, has at least shown a tendency to drift in that direction. "Our cognition, as it stands, is explained

as a mutual negation of the two properties. Each has a positive existence because of the presence of the other as its negative" (*Emotions*, p. 571). I do not suggest that Prof. Bain in this ominous utterance really means what he says, but he means quite enough to be on the edge of a precipice. If the school of "Experience" had any knowledge of the facts, they would know that the sin of Hegel consists, not at all in the defect, but in the excess of "Relativity." Once say with Prof. Bain that "we know only relations;" once *mean* (what he says) that those relations hold between positives and negatives, and you have accepted the main principle of orthodox Hegelianism.

DOUBLE NEGATION.

§ 28. It is obvious that *duplex negatio affirmat.* To say "It is false that A is *not* B" is equivalent to the positive assertion, "A is B." But this is not because the added negation barely negates the original judgment. For if that were all, we should be left with nothing. If mere not-A is simply zero, then not-not-A is, if possible, less. And we must not say that negation presupposes a positive judgment, which is left in possession when the negative is negated. For we saw before (Chap. III. § 4) that this positive judgment is not presupposed.

§ 29. The real reason why denial of denial is affirmation, is merely this. In all denial we must have the assertion of a positive ground; and the positive ground of the second denial can be nothing but the predicate denied by the first. I can not say "It is false that A is not *b*," unless I already possess the positive knowledge that A *is b*. And the reason of my incapacity is that no *other* knowledge is a sufficient ground.

§ 30. I will briefly explain. We know well by this time that, in judging A not to be *b*, I presuppose a quality in A which is exclusive of *b*. Let us call this *y*. I now desire to deny my judgment, and need, as before, some quality as the ground of my new denial. Let us take some quality other than *b*. Let this quality *z* be exclusive of *y*, and let us see what we have. We have now A*z* with the exclusion of *y* which excluded *b*. But that leaves us nowhere. We can not tell now if A is *b*, or is not *b*, because *z* itself, for anything we know,

may also exclude *b*, just as much as *y* did. What, in short, we have got is our own private impotence to deny "A is *b*;" but what we want is an objective ground for declaring such a denial to be false.

The same result holds good with any other quality we can take, excepting *b* itself. The only certainty that *b* is not absent is got by showing that *b* is present. For the possible grounds of the exclusion of *b* being quite indefinite, you cannot get rid of them by trying to exhaust the negations of *b*. You could only do that if the number of possibilities with respect to A had already been limited by a disjunctive judgment. And this is not here the case.

Suppose, for instance, we have the judgment that "Ultimate reality is not knowable," and we wish to assert that this judgment is false. We expose the ground on which it is based, and go on to show that this ground is not valid. Our proceeding, no doubt, may be perfectly admirable, but all that it gives us is the right to doubt the original judgment, and to deny the truth of the basis it stands on. If we wish to *deny* the original judgment, we can not do that by refuting our antagonists. We must show ourselves that reality *is* knowable. The ground for the denial of "A is *not b*," must lie in "A *is b*."

§ 31. I will endeavour to remove a possible source of misapprehension. It might be urged that in practice the denial of a judgment can always be denied by something other than the judgment itself. Thus, for instance, "It did rain yesterday," may be false, because it snowed or because it was fine. But each of these can be denied on the ground of the other. The result of our double negation of "it rained," might be either "it snowed," or again "it was fine:" and we might return to "it rained," by virtue not of a double but of a triple denial.

But this objection would rest on a misunderstanding. It is perfectly true that, in denying "it rained," I must imply and make use of some discrepant quality. It is, once more, true that what I have in my mind, and should assign as my reason, may be either "it snowed" or again "it was fine." But it is a mistake to conclude that the denial really rests upon either the one of these or the other. Whatever you might have had

in your mind, no logic could force you to allow that your denial had committed you to either "it snowed" or "it was fine." What we *use* in denial is not the *whole* disparate: it is that part of the disparate which answers our purpose. The denial asserts no more than the existence of so much quality as is enough to exclude the judgment "it rained." This universal "so much" is possessed by either "it snowed" or "it was fine," and *this* you can not banish by anything short of the judgment "it rained." In other words, if you say "it did not rain," you are at once committed to a positive "because," but you are committed to nothing but an unspecified quality. The evidence for this quality no doubt in the end must be found in the presence of a contrary assertion, but the mere contradiction does not affirm this or any particular contrary. It affirms merely *some* contrary, and you get rid of this only by the judgment "it did rain." We find here once more the constant ambiguity, which we have seen (Chap. III. § 19) makes the use of negation so precarious. It is so difficult to work with double denial that I hardly can expect in the present volume to have supplied no example of the error I condemn.*

* Mr. Venn, I think, has certainly done so. When I had the pleasure of reading his *Symbolic Logic*, I congratulated myself on the fact that I had already written the present and all the preceding chapters. I have not found occasion in consequence to alter anything of what I had written, but I should like to use one of his principal doctrines to exemplify the fallacious use of the negative. I have added this discussion as a mere appendix, for it hardly carries the subject further. It is due to myself to defend my own views against a counter theory from a writer of established and merited reputation.

After calling attention to the ambiguity of affirmative universals, the doubt, that is, if they affirm the existence of their grammatical subject, Mr. Venn, if I understand him rightly, asserts that at all events the negative is *not* ambiguous (p. 141). I will not here enquire if in other places he is compelled to recognize that the opposite of this assumption is true. At all events the foundation he here seems to build on is the assertion that negatives have only one meaning. "It comes to this therefore that in respect of what such a proposition affirms it can only be regarded as conditional, but that in respect of what it denies it may be regarded as absolute" (142). The affirmation of xy is always ambiguous, since x may not be *actual;* but the denial of x not-y is perfectly clear. And upon this basis he seems to build his doctrine.

Now the reader of this volume will know that a negation is always ambiguous. We may consider this as settled, and I will not re-discuss

the general question. I will first call attention to the seeming absurdity of Mr. Venn's doctrine. He teaches in effect that, although you do not know what a statement means, you can always tell what you mean by denying it. And he ought to hold that the ambiguity of a judgment at once disappears, if you deny it and then deny your denial. This course has not generally been found so successful.

But it is better to show the actual mistake. And we will preface our criticism by setting down some elementary truths. You can not argue from the assertion of possibility to the assertion of actuality, but you can always argue from the denial of possibility to the denial of actuality. To deny possible x (you must of course not take "possible" as "*merely* possible") is by implication to deny actual x. Now the simple application of this commonplace doctrine is that, if you are given a connection xy and do not know whether it is possible or actual, at all events, if you deny its possibility, you may be very sure that you also, and as well, have denied its actuality. This is literally (unless I misunderstand him) the whole principle which Mr. Venn unconsciously proceeds upon, and the idea that it could lead to any great result, or to a better understanding of hypotheticals, seems somewhat strange.

I can not be quite sure of his exact procedure, but I think it is this. The affirmative judgment both affirms and denies. Mr. Venn will not say that what it affirms is mere possibility, but he quietly assumes that what it denies is impossibility. (If he does not do this, he makes a simpler mistake to which I will return.) That is to say, he tacitly and without any justification assumes that x not-y asserts the *impossibility* of xy; and it is solely by denying this arbitrary fixture that the positive xy becomes unambiguous. But if he wishes to restrict the affirmative judgment to the minimum sufficient to deny the denial of possibility, surely it would be better to say at once, "The affirmative judgment does not assert more than bare possibility." He would so have done openly and in an intelligible manner the very thing he has in effect done, indirectly and most objectionably, by going round through two denials. The procedure could in no case have become *more* arbitrary.

I will put the same thing otherwise. With affirmative judgments possibility is the minimum: with negative judgments impossibility is the maximum. Now it is *uncertain* (we may so interpret Mr. Venn) if the affirmative xy asserts the maximum (actuality) or the minimum (possibility), but it is certain that it unambiguously denies the negative. But, if the negative becomes unambiguous because it is arbitrarily fixed at its maximum degree (impossibility), then surely it is clear that we thereby, and *ipso facto*, are fixing the affirmative at its minimum degree. For so far at least as the affirmative denies and is *not* ambiguous, it is so because its minimum is enough. And the fallacy is simple. This minimum is not enough unless the negative is fixed at the maximum. Suppose not-xy to mean "xy *does* not exist," then "xy is possible" ceases to deny this: for, although xy may not exist, it still can be possible. Again if xy meant "xy is actual," then "xy is impossible" (or, again, "if x then no y") is not its contradictory, and goes a long way beyond its denial. In short, since not-xy means either *de facto* non-existence or else impossibility, it

seems absurd to assert that the denial of this is not ambiguous. And if you mean to fix the meaning of the negative arbitrarily, it seems absurd to shrink from doing the same by the positive.

In conclusion, if we suppose that not-xy is really meant to assert non-existence, that is to deny the actuality of xy, then the error is palpable. You first say you do not know whether xy asserts existence or possibility, and yet you say it denies the non-existence of xy. But possibility, not affirming existence, of course can not deny non-existence, and the whole process disappears unless you rapidly shuffle from one term to the other.

This hidden equivocation soon begins to bear fruit in the curious reasoning which immediately follows (p. 143). If I do not misapprehend Mr. Venn, he tries to make a passage from bare possibilities to a positive existential judgment. I confess his metaphysics take away my breath; and I am bound the more to admire his audacity as he somewhat poses as abjuring "transcendentalism," and likes to take things "in a perfectly matter of fact way." But let us see what this way is. We suppose four possibilities, (i) x with y, (ii) x not-y, (iii) y not-x, and (iv) not-x not-y. We have first a *conditional* assertion of xy, and this destroys (ii). We have next a similar assertion of yx, and this destroys (iii). We have therefore, after this second assertion, but two possibilities, (i) and (iv).

"Before, the positive possibilities were three in number, now they are reduced to two; for it is implied that everything must be either both x and y or neither of the two. Carrying this process one step further, we see that three such" [i.e. conditional] "propositions would be requisite to establish unequivocally the existence of any one of the four classes. If we expunge $\overline{xy}$" [i.e. not-x not-y] "also, we are then reduced at last to an assertion of existence, for we have now declared that xy is *all*, viz. that within the sphere of our discussion everything is both x and y" (p. 143).

Now, so far as I can see, we may understand this process in two different ways, but on either understanding the argument is vicious. The first way is to take our possibilities as holding within an exhaustive disjunction. As Mr. Venn says, we know "that everything must be either xy, or x not-y, or y not-x, or not-x not-y" (142). The disjunction will rest here on a positive existential proposition, and the inference will be quite correct. But the objection is that, on Mr. Venn's theory, we can hardly assume that we have such a disjunction. At least I do not understand why the assertion, Everything is one of four possibilities, should be able to be taken in its *positive* meaning. We surely are bound, if we wish to be unambiguous, to take it as denying. And if you take it as denying, *it does not prove the conclusion.* It asserts that what is *not* one of four possibilities is non-existent (or impossible), but it does not say that anything exists. The *possibility* of everything is all that is asserted, and from this the argument will not take you to more than the sole possibility of xy. If you start with nothing but possibilities, you can not cross from a bare possibility to actual existence simply on the ground that the *other* possibilities have sunk into nothingness. At least I am sure "transcendentalists" especially would be interested in learning Mr. Venn's "matter of fact way" of accomplishing this exploit.

We thus see that the reasoning can not be based on an affirmative existential disjunction. And without this foundation it is thoroughly unsound. Not-x not-y is to be suppressed by a conditional judgment, and in its dying struggles is to establish xy as "an assertion of existence." I will not ask what the conditional proposition could be. "If anything exists then xy exists" might answer the purpose; but it would not do so unless it were really unconditional, and covertly contained the very assertion that "xy is actual." And this I think is the alternative to which we are brought: we either completely abandon and throw over our doctrine of the superiority of the negative, and avowedly start with an affirmation of existence: or else we prove the existence of xy through a double denial which assumes the conclusion in order to extract it.

We may verify the presence of the same ambiguity in the extraordinary assertion that contrary judgments, such as "All x is y" and "No x is y," can be compatible (145). It is not worth while to enter into a discussion of this matter. They are of course compatible if you allow yourself to play on their ambiguity; but how in that case they can be said to be contrary I have no conception. "The interesting and unexpected application" is to me, I confess, not anything beyond a confused example of a well known doctrine concerning the relations of possibility and existence. But I confess besides that, I have never been much used "to discuss the question in a perfectly matter of fact way."

I need not mention what seem to me other mistakes of much the same kind. And, beside these, there are some statements in connection with the hypothetical judgment with which I do not agree, but for which, I think, my treatment of the subject has provided sufficiently. I am sorry to be forced, both here and again (Chap. VII.), to emphasize my difference with Mr. Venn. And by way of compensation I should like, if he will allow me, to offer a suggestion. If Mr. Venn had not such a horror of "metaphysics" and "transcendentalism," if he was a little less resolved to be "matter of fact," and "discuss the question entirely on scientific or logical ground," I fancy he would have come somewhat nearer a solution of the problems it is his merit to have undertaken. At any rate I suspect his idea of science might have been expanded, and some prejudices as to "matter of fact" have been somewhat loosened. He would certainly have imbibed a dislike for artifices, and such a scruple against entertaining commodious fictions, as in itself would have saved him from a succession of serious logical mistakes.

CHAPTER VI.

THE QUANTITY OF JUDGMENTS.

§ 1. If in considering an idea you attend to its content, you have its intension or comprehension. Its extension may be taken in two different senses. It is an instance or instances, ideal or actual. It refers ultimately to the real, but it may directly signify (*a*) any other more concrete idea which contains the intension, or (*b*) any individual of which the intension can be predicated. Thus if "horse" signifies the attributes possessed by a horse, it is taken in intension. If it signifies any other idea which includes "horse," *e.g.* cart-horse or race-horse, it is taken in extension. And again, it is otherwise taken in extension if it is used for individual horses.*

§ 2. We have come again upon a distinction which is now familiar. An idea is symbolic, and in every symbol we separate what it *means* from that which it stands for. A sign indicates or points to something other than itself; and it does this by conveying, artificially or naturally, those attributes of the thing by which we recognize it. A word, we may say, never quite means what it stands for or stands for what it means. For the qualities of the fact, by which it is recognized and which correspond to the content of the sign, are not the fact itself. Even with abstracts the actual case of the quality is hardly nothing but the quality itself. The idea and the reality are presumed to be different.

It is perhaps an ideal we secretly cherish, that words should mean what they stand for and stand for what they mean. And in metaphysics we should be forced to consider seriously the claim of this ideal. But for logical purposes it is better to ignore it. It is better to assume that the meaning is other than the fact of which the meaning is true. The fact is an individual or individuals, and the idea itself is an universal. The extension can not be reduced to intension.

* If it were used for *possible* horses, it would be taken in sense (*a*). Cf. pp. 158, 167, 173.

§ 3. The difference may be expressed by the terms "denotation" and "connotation." These phrases have found favour with the English public, and the indiscriminate use of "connotation" marks one kind of superior person. But they serve no useful purpose in logic. They are unnecessary and objectionable. They have no advantage over the terms in general use, and they have in addition a positive vice. To "connote" is to "imply;" and the meaning of a word is not its implication. With the names of individuals the meaning may perhaps be said to be "connoted," but with adjectives such as "red," and abstracts such as "redness," what is "connoted" is clearly not at all the attributes but the individual reality. Nothing but ambiguity can arise from such perversions. If you *will* use a word which signifies implication, to convey what more usually is the direct meaning, you must expect the confusion which your unfortunate choice has already to some extent occasioned.

§ 4. Hand in hand with this slovenly terminology there goes a superstition we have in part refuted (Chap. II. § 17). We are told that words may be "non-connotative." They may signify, we are told, a subject only or only an attribute. Both of these assertions must be rejected. No word such as "whiteness" stands simply and solely for the abstract quality.* It means this directly; but it indirectly points to an implied individual, an actual case of whiteness. And still less can be said for the doctrine we have already refuted. The name of an individual must carry with it and imply certain attributes, or else its attachment to that individual becomes a psychological impossibility. It is mere want of thought which allows us to suppose that a sign can mean nothing and yet stand for something.

§ 5. It would be as easy to prove that a word may mean nothing and may also stand for nothing. And it may be useful, perhaps, at this point to digress. We have seen that all propositions are "real" (p. 41). Verbal propositions become *manifestly* real, if you write them "The meaning of S is P."

* All ideas imply a reference of their content to the real (p. 4), and hence to the individual. We may notice besides that abstracts imply *within their content* a supporting subject. They are doubly adjectival.

But there is a class of judgments where the subject has got no definite meaning, and is not a perfect sign. If we take such a statement as "*magistri* is the genitive case of *magister*," we might be tempted to assert that some words are devoid of both extension and intension.

"Theophilus is Greek," "Theophilus is dear to God," "Theophilus has the measles." The last of these informs us of the disease of a man. The second tells us the meaning of a name. The first assures us that a word is a member in a system of signs, but it seems to give us nothing which that word stands for and nothing that it means. If a sign were something with a *definite* signification, then we could not say that all words are signs. We may know of a sound no more than this, that it is a sign. It stands for something, but we do not know what; and it means something also, but what we do not know.

And we are not at the end. This last remnant of ordinary extension and intension is doomed to vanish. I may treat the word as a common noise. "Why did you make that noise *Theophilus* when you saw that man? *Theophilus* is not a pleasant sound." We have here no signification and no meaning, nor have we any longer a word. But even here in a rudimentary form we have the sides of extension and intension. We may distinguish two elements that are blended in *Theophilus*. Even here it is universal, and is the product of abstraction and generalization. The sound that I should know under all its differences, of varying tone, of the person uttering, and of places and times, is one side of the whole. The other is *this* particular utterance and other possible particular utterances. The elements still co-exist at this early stage of their evolution. We can never separate the one from the other except by a mistake.

§ 6. Let us dismiss for ever the term "connotation," and try to keep clear of the errors it beacons. We may pass to a doctrine of another kind, not so misleading but equally idle. Extension and intension, we are told, are related and must be related in a certain way. The less you happen to have of the one, the more you therefore must have of the other. This statement has often passed itself off as both true and

important. I confess that to me it has always seemed either false or frivolous.

(*a*) If we take extension to mean that number of real individuals of which the meaning is true, then it is ludicrously false that an increase of the extension is a decrease of the meaning. The logician who, impelled by the practical syllogism, begets a child, does not find his doctrine verified by the fact. The conclusion, which appears from the union of the premises, no doubt may surprise him and add to his experiences, but it may not diminish the "comprehension" with which he hears the word child. His new-born instance may destroy his definition of the genus *homo* as *animal risibile*, but the content it shears off will be largely made good by other attributes. He may say, what he never thought to have said, *All* children are scourges.

It is obvious that fresh instances may increase the intension by the discovery of attributes essential but overlooked. The doctrine understood in this sense is false. And if you write "possible" for "actual" individuals, still diminution of the meaning need not add to the number. If possible means that which is presumed to exist, we may remark that the complex may be possible in fact just as much as the simple ; the simple indeed by itself may be impossible. But if possible means what can be produced by artificial and arbitrary thinking (p. 187), we have now obviously left the sense of extension we have been dealing with. The extension has ceased to lie in the individuals ; it has become those groups of attributes in which analysis can find the meaning.

§ 7. But (*b*) even if we give this sense to extension, the doctrine is not true. If you compare ideas, the narrower meaning does not always have the wider application. Take a simple instance. The idea of the visible has, we may all admit, a fuller meaning than the ideas of that which can be tasted or smelt. But the latter have not got any greater extension. Everywhere, if you take adjectives or combinations of adjectives, which are co-ordinate and which can not be subsumed the one under the other, the doctrine ceases to have any bearing. Since the greater emptiness has not been got by further abstraction, there is no reason why the adjective which

has less content should be predicable of a greater number of kinds.

And if for marks and combinations of marks we substitute laws or modes of combination, the same thing holds good. If these laws do not stand the one under the other, but simply fall under a common head, then you have no right, on comparing these laws, to expect the emptier to be the more wide and the wider to be more empty.

§ 8. There undoubtedly is *some* truth in the doctrine, but that truth does not come to much more than this. If you take adjectival marks or laws, and choose to arrange them in the form of a pyramid; if you place at the bottom, and as the stones of your lowest layer, all those ideas which have nothing subordinate; if you form the second and superimposed layer by subtracting the differences from two of these stones, and by placing the residue left by the operation on the top of the pair; and if you so proceed to pile layer upon layer, so as to form a mass which grows narrower with each tier—if all this is done, then it is geometrically true that the higher you go up the fewer stones you will find, and the lower you go down the more stones you will have. And since you have gone up by leaving out differences, it is obvious that the narrower the pyramid becomes the more stones will each single stone have to stand upon, and the more there will be of which it can be predicated. This is undeniable, but what does it come to? It comes to this, that *if* you arrange your material in a certain geometrical figure, *then* it will have certain geometrical properties. That is true, but it seems to me quite frivolous.

§ 9. It is true, I admit, that if B must be C, then, supposing A should ever be B, it will also be C. But, if you offer me this as a truth about A, I can hardly affect to feel very grateful. It looks to me more like a truth about B. You begin to establish a claim to gratitude when you show me also that A *is* B, or is likely to become so. And this is the real question at issue. If you arrange ideas in a certain way they will have the qualities of that arrangement. Who doubts it? What first may be doubted is the possibility of so arranging *all* ideas; and what may next be doubted is the

wisdom of the arrangement. If it is not the natural relation of the material, if it is forced and arbitrary, then the truth you offer me may after all be sterile. It may have little or nothing to do with the actual matter in hand.

If you confine yourself to the ideas of adjectivals, then (though I will not undertake to maintain it) I think that with more or less of regularity you may effect your pyramidal arrangement; but I think you much over-estimate its value. If reasoning were always the subsumption of a stone on a lower tier under a stone belonging to a higher layer, then your construction would begin to serve as a machine and would even live; your ladder would grow green and blossom as the tree, not of pedantry, but of knowledge. But reasoning is really not always subsumption, and with the cutting off that root of delusion your tree shows dead, and breaks before the breath of actual existence. The importance ascribed to your arrangement of ideas comes from a fundamental mistake. (See Book II. Part I. Chap. II.)

§ 10. And there remains an objection we can not discuss but must not pass over. If you do not confine yourself to the ideas of adjectives and their combinations, what then? Take ideas of individuals. If you have ideas of smaller wholes, enclosed in and subordinated to larger wholes, will it there be true that the wider the synthesis the emptier it becomes? Are universals always more abstract than particulars? Is it certain that the idea of a state has less content than the idea of any one of its citizens? Are we sure that the soul is more of an abstraction than any particular psychical event? Is the idea of God assuredly less full than the idea of a molecule? And if we consider the idea of synthetical unity, it does not appear that the higher and wider function of synthesis need have less attributes than a subordinate function. If we entertain the belief that syntheses are possible which are not the abstraction from lower syntheses, but are the individuations of these lower abstractions, then the doctrine which has showed itself to be idle once more becomes a positive error.

This objection, I am aware, will not press very heavily. There are few readers not so wise in their own esteem as to

convict this suggestion of folly or madness. It would belong to metaphysics to lay folly at the door of its true possessors. It is sufficient here for our logical purpose to have pointed out an objection, disregarded and despised, but in itself not despicable.

Apart from this possible ground of dissent, and confining ourselves to the consideration of marks and the modes of their union, we may sum the matter so. The law of the relation of extent to intent is not a law of ideas themselves; it is a law of pyramidal arrangement; and that arrangement in the case of ideas, where it is possible, is not of importance. It may fairly be relegated to our logical lumber-room.

§ 11. The question which is next to claim our notice is still concerned with Extension and Intension. If we leave mere ideas and go on to judgments, it has been asked whether these make a statement in respect of the extension of their elements, or the intension, or both. And this is a topic we can not quite pass over, as it presents us with several dangerous illusions. I will begin by the assertion that every proposition can be read in whichever of these ways we prefer. I will then show, in the first place, how all can be interpreted in extension, and will prove the same, secondly, with respect to intension.

§ 12. Every judgment makes a double affirmation, or a single affirmation which has two sides. It asserts a connection of different attributes, with an indirect reference to an identical subject; or it directly asserts the identity of the subject, with an implication of the difference of its attributes. If you prefer to consider the identity of the subject (immediate or ultimate), you read the judgment in extension. If again you emphasize the connection of the differences, you take the judgment intensionally. It is not true that every judgment is *naturally* read in both of these ways. It is true that all judgments can be read correctly in either manner, and read legitimately.

If you take the proposition "Dogs are mammals," then this means either that, where anything is a dog, the same individual thing will be a mammal; or that, given in anything the attribute dog, you will certainly have with it the attribute

mammal. And it is possible to interpret every judgment in this self-same way.

§ 13. Dismissing for the present the intensional reading, let us consider interpretation in *Extension*. We find here the presence of misleading errors. It is a common doctrine that when we read in extension we assert inclusion in a class or collection. We are told that in "Dogs are mammals" no attribute is really affirmed of dogs; the assertion is that the things called dogs are included within the class of mammals. I can discover little in this current theory but error and confusion.

It sounds at least palpable, when we hear of enclosing within a class. But try to handle it, and at once your grasp is closed upon mist and unreality. The class, if it is to be real at all, must be, I presume, an aggregate or collection of individuals; and this must exist either in my head or else outside it. The latter alternative can hardly be meant. There is no actual physical aggregation which answers to every general name. For every single mark would be the ground of such an aggregate, and I can not suppose that any one believes that these strange complications of groups or herds actually exist *in rerum natura*.

§ 14. "The class is mental. It is no group of things. It is our own private way of putting images together within our own minds." But, at the risk of seeming to affect singularity, I am bound to assert that within my own mind I can not find these classes. By a class I suppose you mean a group of images which actually exist; but when I come to the facts and look into my mind, and survey what is there when I hear the word "mammals" or "triangles" or "cats," I scarcely ever am able to find an actual group. The idea that "mammals" is the name of a flock of mammal-images, herded together in my mental field, and that among these I can see the little pack of dogs, and all the cats sitting together, and the rats, and the rabbits, as well as the elephants, all marked with curious references and cross-references to heads "quadruped" and "carnivorous" and "placental" and Heaven knows what else—I do not think that this looks like the fact.

§ 15. These flocks and herds are pure mythology, they are nothing real. But let us suppose that they really exist. Entertaining fables, we may unawares embrace a truth. Let "mammals" be a group of mammal-images; and let "dogs" be a mental pack of dog-images; and let the judgment "Dogs are mammals" be the inclusion of the former within the latter. But what does this mean?

If I look at the mammals I either know which mammals are dogs, or this is hid from me. (*a*) Suppose that I know it. The *inclusion* then means that a certain definite number of my present mammal-images are also dogs, and that these are surrounded or mixed up with the residue of mammal-images which are not dogs. The judgment asserts a spatial relation in my mind of the dog-mammals to the mammals which are rats and cats and rabbits and the rest. But such juxta-position, let it be ever so actual in my imagination, is clearly not what we meant by our judgment. I wanted to say something real about dogs; but this local relation fabled in my head does not even pretend to represent external existence.

(*b*) And if I do *not* know which mammals are dogs, the case is not altered. I regard my mental conglomeration of mammals, and fail to distinguish the dogs from the cats. I can not say which image is a dog-image, but I know that the dogs are every one there. They are inside the mammal-fold and not outside. The mammals range over a mental park, and all the dogs are on this side of the paling. But that again is not what I meant to assert. The local position of my canine images with respect to the enclosure which bounds my mammals, is not the idea which I meant to convey by "Dogs are mammals."

§ 16. These interpretations are fictions—that is one objection. But it is followed by another—they are unprofitable fictions. They are not only baseless: they also are useless. They do *not* read the *whole* proposition in extension. If the extension means the *objects* called mammals, then in neither case is "mammals," in this sense, the predicate. In saying "Dogs are enclosed by mammals," I do not say that "Dogs *are* mammals." A group of objects is one thing; a spatial relation, indefinite or definite, to that group of objects is

clearly another thing. And, what is more, that relation is an attribute of dogs. The local relation is not the things themselves, and it certainly is predicated as qualifying dogs.* If the ostensible predicate has been taken in extension, the proposition has in part been read intensionally; for it *has* asserted an attribute of the subject. The inclusion within the class has no meaning, if the class *is* the mere individuals themselves, and the copula simply asserts them of the subject. But if the judgment affirms a spatial relation to some of those individuals, or the area they all occupy, or the fence that confines them, then what the judgment really affirms is an attribute.

§ 17. If we keep to extension we must keep to the objects, and it is these we must try to predicate of the subject. In "Dogs are mammals" we must try to assert "some mammals" of dogs. What is affirmed must be identity. The dogs and dog-mammals are all the same thing. (Cf. Chap. I. § 17.)

If they were *wholly* the same there would be no difference. They could not then be at all distinguished, and both sides of the judgment would fall together. The judgment would disappear. Hence a difference must exist; and what we mean to say must come to this, that, Though the dogs and dog-mammals are the same, yet for all that—what? Here we have to join issue.

For all that, we may say, they are sometimes inside the mammal-enclosure and sometimes outside, and that is the difference. The dog-mammals sometimes are packed by themselves, and go wandering off in the mental distance, and at other times their images, compelled by some secret influence, consort with all whose blood flows warmly. But this strange mythology would not answer to our meaning. We never intended to say that the dogs could exist indifferently on each side of a hedge which grows in our minds.

§ 18. "The dog-mammals and the dogs are all the same, and yet for all that their *names* are different. You have a set of individuals which obviously in themselves are simply themselves. The difference asserted is the difference of their

* I do not say the spatial relation of A to B is *nothing but* an attribute of A. Still it *is* such an attribute.

two signs 'mammal' and 'dog.' That surely is a very palpable thing, and, in saying 'Dogs are mammals,' we mean to assert that certain definite indivisible objects have got two names. It happens that they have been christened twice, or christened with two names, and this is the real heart of your mystery."

The explanation possesses the merit of simplicity. It is perhaps too simple for sophisticated mortals. Belief in it will not "come with observation," but demands a new birth from the world of fact into the world of faith. Philosophy has not revealed it, and not many wise are likely to accept it. The creed of nominalism is no theme for argument. To those who believe that assertions about things assert nothing but names, the universe has long ago given up her secrets, and given up everything.

§ 19. The first interpretation asserts that the individuals, notwithstanding their sameness, cross and recross the mammal-fence. The second asserts that, although they are the same, their names are different. The first interpretation is a fiction; the second ignores the fact to be interpreted. Neither expresses the meaning of the judgment; and both in the end do predicate attributes. The change of position with respect to a herd or the pale that encloses it, is a spatial attribute. The possession of one or two or three names is again an attribute. The subject *is* not two different names; it *has* them. One name *is* not the other; it *co-exists* with it. One thing as distinguished *is* not the other thing; both have a *quality* which is the same. On the nominalist interpretation the actual predicate is *not* taken in extension. The interpretation is not only ludicrously false, but, if we take it as true, it still asserts an attribute of the subject.

The natural and the true interpretation of "Dogs are mammals" is that dog and mammal are different attributes, and that these differences co-exist within the same things; or again, that, though the things are certainly the same, for all that they possess two different attributes, dog and mammal. But this natural interpretation involves the abandonment of the theory of inclusion within the predicate.

§ 20. And if you understand extension in a different sense, the result is the same. The class of mammal may be taken

to contain, not only the collection of individuals which are mammals, but also the kinds of thing which are mammal. "Dog is one kind, and the judgment includes it among all the other kinds" It is doubtful what this means, but, whatever it means, the extension is not affirmed as a predicate. If I have in my mind a known or unknown aggregate of kinds, and say that dog is in the midst of this aggregate, then I assert of dog a spatial relation to a set of elements or the area they occupy. But this relation is surely an attribute. If again I mean that dog is an unit which, taken in addition with other units, amounts to the sum which I call "mammal," then I assert a relation to the other units, and a further attribute that results from this relation. If I mean that dog possesses mammal, and that other kinds, known or unknown, do so, or that dog is like these other kinds in possessing mammal, then again I assert an attribute of dog, the having an attribute, and the identity in this respect with some other kinds.

These interpretations are all forced and unnatural. They none of them are really what I have in my mind when I say "Dogs are mammals." Inclusion is not what I mean to assert. But, if I assert it, then my predicate is an attribute. The whole or part of the extension of mammals is not the real predicate. The predicate is that which I either affirm or deny of the subject, and a thing is not the same as a relation between itself and something else.

§ 21. If you say, "The dogs, with other things, make up a certain amount we know as mammals," then this contribution to a certain number is an undeniable attribute. If you say, "The dogs share a quality mammal with a heap of other things," this again is an attribute. If you suppose dogs and mammals to be two different lots in two adjoining folds, and if you pull up the mental hurdles which separate them, then you can not say, "The dogs are in the mammals," unless you are prepared to embrace a marsupial or some other such hypothesis. They are related locally to the other mammals or to the area or fence within which all mammals are circumscribed. And this local relation is an attributive predicate.

The mythology you invoke is not strong enough to save

you, and, if you throw yourself into the arms of Nominalism, then you have not only an account of the fact which is absurdly insufficient, but the difference of names is still an attribute.

And if, in the end, to escape from your difficulties, you say "The class is no *real* collection in my head or out of it. It is a name that stands for the *possible* objects that have a certain attribute," then the answer is simple. If the class is no longer an aggregate or collection, it has become little else than a mere *description*. "Dogs are included in a possible group of things which are mammals," "Dogs are of the description mammal," "Dogs possess the attribute mammal"—what is the difference between these three assertions? I ask you, is there any, and if so, what? To include real dogs among mere possibilities can hardly be the end you have in view. You must mean, "The dogs possess this attribute, and by virtue of this attribute are related to other possible mammals." The last part of the sentence calls for interpretation. "Dogs," we must read it, "are not only mammals but, supposing anything else to be mammal, then we may argue a relation between this thing and dogs." What relation? Surely not juxta-position; that is too preposterous. The relation meant must surely rest on nothing whatever but the joint possession of the attribute. The inclusion in the class of possible mammals means nothing but the having the attribute mammal, and in addition, a hypothetical relation of identity with anything else of the same description. We predicate two things, in the first place a quality, and then a relation to possible objects supposed to have the same quality. Both of these predicates are attributes, and the last is an addition which may be superfluous. It is a mistake to think that the phrase "possible" will help us anywhere into anything but bad metaphysics. And the favourite prey of this delusion is the men who think themselves above metaphysics.

We may briefly sum up this matter thus. The only way to read the *whole* judgment in extension is to take it as asserting a relation of identity between different individuals. Two individuals are one though their attributes differ. This is simply the other side of the judgment that different attributes

are interrelated within the same individual. To take the subject as included in the predicate is in the first place to substitute fiction for fact, and in the next place *is* to predicate an attribute and is not to read the whole judgment in extension. But if the subject alone be taken in its extension, then what is asserted is obviously a connection of attributes within an individual or individuals.

§ 22. Every judgment can be read in extension. Although some present two or more subjects in relation, yet all can be reduced to the affirmation of a connection of content within one subject. In "A is to the right of B," the whole presentation is the subject, and the spatial relation of A to B is an attribute of that. In "Cæsar is sick," the same person is said to be sick as well as Cæsar. And in "Dogs are mammals," there are certain things which are declared to be both. In this sense of extension every proposition can be read extensionally.

We have now to ask if every judgment can be taken in *intension.* Can not only the predicate, but also the subject be reduced to mere content? Do they all assert a connection of attributes? And this question at first sight may be answered in the negative. In "Cæsar is sick," we certainly have a junction of adjectives, but it will be said, "We have something else beside. There is the individual of whom these qualities are predicated; and this individual is finite and determined. Admitted that in every intensional judgment you have a reference to the ultimate reality, and that this reality is individual, yet the ultimate subject does not affect the judgment. It is given undetermined except so far as it is determined by the judgment: and hence it does not interfere with the connection of the adjectives. But when you have a finite subject, then that subject interferes. In 'Cæsar is sick,' the judgment is not true unless you make it of this one Cæsar. You can not get rid of the individual person, and, while he remains, he prevents your reading the judgment in *intension.*"

§ 23. We have already cut the ground from under this objection by proving that every such judgment is hypothetical and strictly universal (Chap. II.). If the subject is taken as an existing individual or set of individuals, then no doubt the judg-

ment is categorical, and can not possibly be read intensionally. "All these six sheep have got the rot," "William invaded England," "I have a headache:" if "these sheep," or "William," or "I," are taken as sensible individuals in the series of time, then that character enters into the assertion, and we can not reduce it to a hypothetical synthesis of adjectives. But then our analysis in Chapter II. has shown us that the reduction is demanded. When we press for the final truth of the judgment, the particular subject becomes an unspecified condition of the content. The assertion is thus hypothetical. It conjoins mere adjectives, though what it conjoins is vague and undetermined. The true subject of the judgment is, not this or that finite person or thing, but the ultimate reality. All the qualities of the ostensible subject pass into the condition of a universal connection of attributes. It would be idle to repeat the painful enquiries which have established this result. It stands or falls with our second chapter, and while it stands it carries the conclusion that every judgment can be read in intension.

§ 24. Thus, when the ostensible subject is a particular phenomenon or collection of phenomena, no ordinary means will reduce the judgment. To take it in intension we must apply the drastic treatment we discussed in Chapter II. But in other instances the remedy is more obvious, and is easier to administer. "Some trespassers must be prosecuted," "Some English citizens are to be hung," "In some impossible cases right would be wrong." These assertions would, I presume, be called particular, but none of them need refer to this or that phenomenon. The "some" may mean "under some condition." It may describe the attribute, not point to the individuals.

There are cases where "some" most clearly does not indicate this or that particular or set of particulars. "Some crimes are deserving of capital punishment," "In some diseases the patient should be secluded:" we mean here that, given a crime or disease of a certain sort which we do not specify, then something else would in that case follow. The judgment couples mere attributes with attributes. It does not assert the existence of this or that crime or disease. It is hypothetical, and is naturally read at once in intension.

§ 25. "Some" again may mean an unknown number. "Some English citizens will be hung next year," may mean, not one sort, but one unspecified quantity of English citizens will suffer this fate. A particular event is here asserted, and the proposition must in the end be reduced by the method laid down in Chapter II. But the event it foretells has already in part been stripped of particularity. The forming a number, or contributing to an amount, is an universal attribute: it is a general adjective, and to this extent the subject has been already purified. When read in intension the judgment runs thus, "Given certain conditions, part unspecified, part specified as the attribute of English citizen and the attribute of amounting to a certain number, *then*," etc.

It is an elementary mistake to suppose that number confers particularity and destroys intension. And the error reveals a deep foundation of bad metaphysics. Number is surely nothing but an attribute. And how can the addition of an universal quality force us to take a judgment merely in extension? How can it even help towards such a result? You may say, perhaps, that nothing is numbered save actual phenomena, but such an assertion would be incompatible with fact. "In the single case of two men being three men, four men would be six men"—this is, I presume, an hypothetical judgment. Not only *can* you take it as connecting attributes, but I do not see how you can take it otherwise. It is idle to object that the subject is really the imagined example, where two is three, and that this example is a particular event. For it is nothing of the sort. It is a supposed condition which, if it existed, would really be single, but does not exist and will never be anything real at all.

§ 26. The idea that a numerical subject is particular vanishes as soon as we confront it with facts. The numerical character is nothing but a character. It is nothing but an adjective, and no adjective or accumulation of adjectives will make anything else than an abstract universal. Suppose that a phenomenon is capable of division in fact or in idea. Its divisibility is a general quality, which other phenomena might also possess, and which would not difference one from the other. To be regarded as a collection of units

summed by means of addition to a certain quantity, is an attribute not special to any single phenomenon: it can in no sense bestow uniqueness. And again, if the subject is taken as a quantity which stands in a certain fractional relation to another quantity, it is absurd to think that, on the strength of these mere qualities, you leave universals and get to existence. "If a penny is thrown one thousand times, half the number of throws will most probably give head:" we have here a purely intensional judgment. There is nothing contained in it but bare universals: there is nothing but hypothetical junctions of adjectives. Of course, if you say, "*This* penny in half its throws will now give heads," the case is altered: but the numbers have not changed it. The subject is particular, not because it *is* numerical, but because it is *not* so, because over and above it has now been taken as a particular fact. It must be reduced by the method laid down in Chapter II. But so far as it is numerical it is *already* reduced, and is already nothing whatever but attributes.

§ 27. We may pass on to consider another superstition. If the intension signifies the meaning of a word, and the extension is the number of actual objects of which the meaning can be truly predicated, then both extension and intension are relative to our knowledge, and naturally fluctuate with altering experience. For instance, "mammal" is a term whose meaning has changed and will change. We can fix no limit to the possible information the word may convey, for we do not know how many attributes in the end may be found to be implied in the quality of giving suck. And the number of objects we denominate "mammal" is of course not stationary. Such considerations may seem too obvious to be ignored, but their neglect has given rise to a serious mistake.

In certain judgments, where the predicate is not of the "essence" of the subject, we are warned that an intensional reading is impossible. "All American citizens know the name of their President," is, we are told, to be taken in extension (Venn, *Symbolic Logic*, p. 395). It can not connect one set of attributes with another set of attributes, because the connection it asserts is accidental. But the mistake here is obvious. If I know every single American citizen, so as on this knowledge

to make my assertion, I surely must know by the selfsame process that the attribute I assert exists in each. *After* I have noticed each single citizen, it is one of his attributes and part of his meaning to know the name of his President, and, before I have done so, I can say nothing at all. If the extension is increased, so also is the meaning. And the objection that, if the mark were part of the intension of "American," we should assert it of American citizens in the future as well as at present, may at once be dismissed. If the subject stands also for "all Americans in the future," then the attribute becomes at once part of their meaning. But, if the subject is confined to the present time, then the mark is the meaning of "present Americans," and you have no right to apply it beyond.

The judgment is particular, not in the least because it is "accidental," but because American citizens are facts in time. It would be just as particular if I changed it into "American citizens are Americans." And of course if the citizens meant by the subject are neither real men, nor real images, but mere possibilities, the judgment is hypothetical at once, and we need not have recourse to Chapter II. to effect its reduction.

§ 28. This same mistake lay at the foundation of the doctrine (§ 4) that proper names have no "connotation." The meaning is not fixed, and this leads to the idea that no meaning exists. The simple enquiry "Is the denotation fixed?" leads at once to the result that, here as everywhere, intension and extension fluctuate together.

Both are relative to our knowledge. And the perception of this truth is fatal to a well-known Kantian distinction. A judgment is not fixed as "synthetic" or "analytic:" its character varies with the knowledge possessed by various persons, and at different times. If the meaning of a word were confined to that attribute or group of attributes with which it set out, we could distinguish those judgments which assert within the whole one part of its contents from those which add an element from outside (p. 132); and the distinction thus made would remain valid for ever. But in actual practice the meaning itself is enlarged by synthesis. What is added to-day is implied to-morrow. We may even say that a synthetic

judgment, so soon as it is made, is at once analytic. Kant has really no need of this unfortunate division, which he seems to have inherited. The real question which he means to ask is, What kind of synthesis does each judgment contain, and what in each synthesis is the principle of unity?

§ 29. To sum up the result—a proposition is read intensionally, when both subject and predicate are taken as attributes hypothetically related. Whenever the ostensible subject is no individual or collection of individuals the judgment is *naturally* understood in intension. Where the subject is one or more actual phenomena, the judgment can not be interpreted *naturally* as a hypothetical connection of attributes. But although not natural, this interpretation is legitimate, and is also necessary. When we leave first appearances and ask for truth, we find that any phenomenal judgment, whose subject refuses to be taken as content, is a judgment which is *false* (Chapter II.).

The error we must avoid is the idea that a class is a mere aggregate of individuals. Such aggregates in my head or outside my head are barren mythology: they do not really exist. And if we mean by a class a possible aggregate of possible * individuals, we have no longer any collection. For possibilities occupy no place in the series of events connected with perception. They are not actual individuals, but merely ideal. A possible horse is anything which might conceivably possess the qualities, first of general uniqueness, and then of equine nature (Chap. VII.). Thus if the class means the attribute with reference to a hypothetical collection, to include in the class is to predicate an adjective. It is to assert an attribute, and through that attribute to assert a relation of identity and difference with any other instance.

§ 30. We have by this time had perhaps more than enough of the quantity of judgments, and yet there is a question we have not fully cleared up. The distinctions "universal," "particular," and "singular," fall under quantity, and it may be well that we should more definitely state here the meaning in which we take these terms. The common logic, we shall

* I suppose we do not *always* mean "*judged* possible." Cf. p. 4 *note*.

all remember, ranks singular and universal judgments together, and opposes the particular to both of these. A particular judgment is a judgment which fails to take the subject explicitly and avowedly in the whole of its extension; and other judgments are considered universal because in them you have all of the subject. This arrangement we shall not proceed to discuss. It is sufficient for the technical use of the syllogism, and it is perhaps in itself not so foolish as it seems to be. We need not however pause to examine it. We may be satisfied if we succeed in making clear our own interpretation.

§ 31. The subject is not only beset with ambiguities, but it tends at each moment to cross the border and to enter the field of metaphysics. I am afraid it is impossible for me here to defend the interpretation which I have adopted. I must content myself with trying to exhibit clearly the doctrine which seems metaphysically true, and which agrees with the logical results we have arrived at.

We may realize some difficulties which obscure the subject, if we state them in the form of thesis and antithesis. (i) Nothing that is real is universal, (ii) All that is real is universal, (iii) Nothing that is real is particular, (iv) Most that is real is particular. I believe in the truth of *all* these propositions, and will endeavour to show that they are not in conflict. But first it is better to advocate each.

§ 32. (i) *Nothing that is real is universal.* Indeed, how should it be? What is real is substantial and exists by itself: it is individual. But the universal is nothing whatever but an adjective. It is an epithet divorced, a shadow which apart from its body is nothing, and can not exist.

(ii) *Everything that is real is universal.* How can it be otherwise? For what exists must be individual, and the individual is no atom. It has an internal diversity of content. It has a change of appearance in time, and this change brings with it a plurality of attributes. But amid its manyness it still remains one. It is the identity of differences, and therefore universal.

(iii) And so we see that *No real is particular.* For if particular, then not individual, and if not individual, then non-existent. The particular is atomic. It excludes all

difference. It is itself and nothing beyond itself. And that self is simple: it is so far as it is nothing else. The true particular in respect of quality is shut up in one quality; relations it can not be said to *have;* in respect of time it has no continuance, and in space it can not occupy extension. Its existence in space is nothing but a point, in other words, is nothing spatial. Such a particular is of course not to be verified in experience. It is a metaphysical *ens rationis,* an abstract universal which can not be real.

(iv) And it can not be real because, if not all, at least *Most reality must be particular.* For in existence the individuals which are real are finite. To some extent at least they are defined by their limits. It is because they repel other things that they are what they are. Exclusion by others, and exclusion of others, enters into their substance; and where this is there is particularity.

§ 33. It is obvious here that in thesis and antithesis words have been used with different meanings. And this result we desired to establish. The *abstract* universal and the *abstract* particular are what does not exist. The *concrete* particular and the *concrete* universal both have reality, and they are different names for the individual.

What is real is the individual; and this individual, though one and the same, has internal differences. You may hence regard it in two opposite ways. So far as it is one against other individuals, it is particular. So far as it is the same throughout its diversity, it is universal. They are two distinctions we make within it. It has two characters, or aspects, or sides, or moments. And you consider it from whichever side you please, or from the side which happens for the purpose of the context to be the emphatic or essential side. Thus a man is particular by virtue of his limiting and exclusive relations to other phenomena. He is universal because he is one throughout all his different attributes. You may call him particular, or again universal, because, being individual, he actually is both, and you wish to emphasize one aspect or side of his individuality. The individual is both a concrete particular and a concrete universal; and, as names of the whole from different points of view, these both are names of real existence.

§ 34. The abstract universal and abstract particular are both unreal, because neither are names for the individual. They take the two aspects or characters of the whole, and, turning them into independent existences, then assert their reality. But one side of a whole can not stand by itself except in our heads. It is nothing but an adjective, an internal distinction which we try to take as substantial fact. We can all see that this holds good of abstract universals. The oneness or identity of a man, we know, is not found when we search the series of mental phenomena. But the same is true of the abstract particular. If you take atoms seriously, and deny their extension, you find at once you are dealing with something which can not be fact. Mere exclusion in space of other spaces is nothing real. A reality in space must have spatial diversity, internal to itself, and which it does not exclude. And this holds again with psychical atoms. For, as observed, they have internal multiplicity, duration in time, quality, and degree; and as anything else they could not be observed. An atom which really was particular, which was not divisible at least in idea, could not possibly be fact. It is one aspect of fact torn away from the rest, and is nothing in itself and apart from the act which tears it away.

§ 35. The abstract particular and the abstract universal are mental creations, which, if taken as fact outside our heads, are different examples of the same mistake. Both are distinctions within a whole, hardened into units that stand by themselves. And not only do they spring from the same mistake, but we may even say that they are the same error. The abstract triangle in and by itself is found to exclude all further predicates (cf. p. 114). Determined by that division and consequent exclusion which gave it its origin, it has become particular. And the particular itself, because produced by mental separation, is really no more than an adjective divorced, or abstract universal. The dialectical method has laboured to show that, here as everywhere, insistance upon a onesided view brings out by negation the opposite onesidedness. The universal, the more we emphasize its character, divides itself the more from the whole. We make its being depend on exclusion, and it turns in our hand into its logical contrary.

The particular again, excluding others, and being so far as it merely excludes, is its own negative relation to other particulars. It falls beyond itself into a series of units pervaded by an universal identity, and itself has there become its own opposite. In this speculative movement, if we take it in the character it claims for itself, I neither myself profess belief nor ask it from the reader. But I think we may go so far as this, that in the end the individual is real, and that abstract universal and abstract particular are distinctions taken within that reality, which a mistake has afterwards turned into divisions and hardened into units. If we do not admit that each is a moment which, by negation of itself, affirms the other and begets the whole, we may certainly say that each has sprung from the same mistake, and is an illusion of the self-same kind. And we may muster courage, perhaps, to profess that the individual is the identity of universal and particular.

§ 36. We must keep in view the following distinctions. We have first the abstract universal and particular, and neither of these can exist in nature. On the other side we have the individual, and the individual is the only thing which is real. But where this real is finite it may be taken from two points of view: it is concrete particular or concrete universal. In so far as it is a finite individual which excludes all others, so far it is a *relative* particular. But because it includes a diversity of content, it is therefore also a relative universal.

There is here, I confess, a doubtful point I am forced to leave doubtful. It might be urged that, if you press the enquiry, you will be left alone with but a single individual. An individual which is finite or relative turns out in the end to be no individual; individual and infinite are inseparable characters. Or again, it might be said, the individual is finite, and there can not be an absolute individual. Metaphysics, it is clear, would have to take up these questions, and in any case to revise the account which is given in this chapter. But that revision must be left to metaphysics; and for the purposes of logic we may keep the distinctions already laid down. We have (i) the real, supposed to fall into (*a*) absolute individual or concrete universal, (*b*) relative individual or concrete universal or concrete particular; and (ii) the unreal, consisting

(*a*) of the abstract universal, and (*b*) of the abstract or absolute particular.

§ 37. We may now attempt to lay down what we mean by *universal* judgments. Such a judgment is one whose subject is universal. And it is obvious that here we have more than one meaning. An universal judgment may be (i) absolute, or (ii) relative.

(i) In the first case we have again two divisions. Such a judgment may (*a*) be abstract, or again (*b*) may be concrete. If (*a*) the judgment is abstract, the ostensible subject will of course be an attribute. The statement will truly be hypothetical, since the actual subject is non-phenomenal reality. The ordinary kind of universal judgment such as "The angles of a triangle are equal to two right angles" is, as we have seen (Chap. II.), of this description. And it is universal for two reasons. The grammatical subject is an abstract universal: while the actual subject, the ultimate reality, is a concrete universal and is also absolute. This is the first and more ordinary kind of judgment which we are able to call absolutely universal. But (*b*) it is necessary to mention another sort. Any statement made concerning a reality which is not considered finite will also be an absolute universal judgment. Nothing will fall outside the subject, and the predication will be categorical. I do not say that such judgments are practicable; but they are logically possible, and must be provided for.

§ 38. (ii) A judgment is relatively universal where the subject is a finite individual or collection of individuals. It is universal, because the subject is the identity of its own internal diversity. In "Cæsar is sick," Cæsar is not affirmed to be nothing but sick: he is a common bond of many attributes, and is therefore universal. But this judgment is relative, because Cæsar is one man among other men; and, if you take him so, he himself is particular.

§ 39. A judgment which is absolutely *particular* can not exist. It would have a subject completely shut up and confined in the predicate. And such a judgment, if it came into being, would not be a judgment. For it obviously would say nothing else of the subject or predicate than themselves. "This is this" may be taken as the nearest example.

A *relative* particular judgment is one where the subject is this or that singular or collection. It is the same as the relative universal judgment, but is taken from another side of its nature. The subject excludes all other individuals, and so is particular; but within itself it has a diversity, and so is universal. It possesses attributes other than the predicate, and may be taken within another context. It thus serves as a middle term in reasoning, as is shown in the third of the syllogistic figures.

§ 40. We have seen before (Chap. II. § 45) that no logical difference separates the singular and collective judgments. It is ridiculous to think that if one individual is not universal, you reach universality by adding on others. The number of units is quite irrelevant, since, however many they become, each remains a singular. And this or that collection of individuals is as hard a particular as any individual found in the collection. Nay, from this point of view, the single individual himself turns out to be a mere collection. Considered logically they are both alike. Excluding others, they are relative particulars. Common to all their internal diversity and identical throughout it, they both alike are relative universals.

§ 41. No judgment has or can have a subject shut up within the limits of one single predicate. If we remain at the popular point of view, and admit those judgments where the subject is nothing but a finite phenomenon or set of phenomena, yet even these judgments are universal relatively. The subject will serve as a middle in reasoning. It is hence the identity of differences, and it could not be that if it were only particular. Every judgment is thus universal, and in the end they all may be said to be universal absolutely. For, if we exclude the possibility of non-phenomenal finite individuals, we have shown (Chap. II.) that every judgment to be true must predicate of the absolute individual, either hypothetically or categorically. And the former of these cases must, in the end, be reduced to the latter. The finite subject changes in our hands into a heap of mere adjectival conditions, and, since these conditions can never be complete, the statement loses its categorical force. But becoming hypothetical it predicates indirectly a latent

quality of the ultimate reality, and so once more is categorical, true categorically of the absolute subject.

§ 42. All judgments are thus alike universal, but it can not be said they are universal equally. If the subject of one judgment is a whole which includes the subject of another, the first is certainly the more universal. And again, if we take two abstract judgments, they are both hypothetical, but the one may assert a more abstract connection than is affirmed in the other. The purer hypothesis, the one most set free from irrelevant conditions, will be also more true. It will predicate in a higher sense of the universal subject, and therefore may be called the more universal. But if the connection, although less concrete, is not more pure, we must then not call one judgment more universal than the other, unless we qualify universal by abstract.

§ 43. I will repeat in conclusion the distinctions it is right we should keep in mind. The real is individual. The merely universal or merely particular are unreal abstractions. Concrete universal and concrete particular are the individual from different points of view. But we could not say that an absolute individual was really particular, since it would have no relation to anything outside.

Particular judgments, if taken categorically, are precisely the same as relative universal. The phenomenal individual, or collection of individuals, is the identity of diverse relations and qualities. Universal judgments are relative or absolute. If relative, they are the same as particular judgments. If absolute, they are either hypothetical or categorical. In the first the ostensible subject is an abstraction: in the second it must be the ultimate reality. Particular categorical judgments may all be reduced to abstract or hypothetical universals, and these again to categorical universals. In the end all truth, if really true, is true of the ultimate non-phenomenal fact.

CHAPTER VII.

THE MODALITY OF JUDGMENTS.*

§ 1. Modality is not an alluring theme. I should be glad to plead the fragmentary nature of the present work as an excuse for passing it by in silence. But for the sake of clearness it is necessary to make an excursion into the subject, neglecting those parts of it which do not seem to concern us here.

We must begin by stating an erroneous view. Modality may be supposed to affect the assertion in its formal character, and without regard to that which is asserted. We may take for instance a content S – P, not yet asserted, and may claim for modality the power of affirming this content S – P, unaltered and unqualified, in several ways. S – P, it is supposed, may be asserted, for instance either simply or problematically or apodeiktically, and may yet remain throughout S – P : and thus, though the content is unmodified, the assertion is modal.

§ 2. This doctrine rests on a misunderstanding. There are no degrees of truth and falschood. If S – P is fact, it can not be more than fact : if it is less than fact, it is nothing at all. The dilemma is simple. S – P is affirmed or it is not affirmed. If it is not affirmed, it is not judged true at all. If it is affirmed, it is declared to be fact, and it can not be more or less of a fact. There clearly can be but one kind of judgment, the assertorical. Modality affects not the affirmation, but what is affirmed. It is not mere S – P that is asserted modally : it is another content, a modified S – P. In other words, you do not say that the mere idea S – P holds good

* Cf. Sigwart, *Logik*, pp. 189 and following.

in fact: you first say something else *about* S – P, and it is then this new and different idea which really is asserted.

§ 3. Modality in this sense, it has been rightly observed, has no natural limits. There are endless ways of modifying a judgment so as to make a fresh judgment. You may take the idea of a judgment S – P and express any attitude of your mind towards it. You may say "I make it," or "wish to make it," or "fear to make it," or "can not make it," or "am inclined to make it," or "am forced to make it." All these are simple assertorical statements about my condition of mind. They have a psychological not a logical bearing, and may at once be dismissed.

§ 4. The different ways in which *we* can stand to a judgment S – P are a matter for psychology rather than for logic. Logical modality must be limited to that which seems to affect the idea S – P, and to affect it in its relation to the world of reality. If we say, "I wish S – P were a fact," this once more is a psychological mode. The content S – P is not here first modified and then attributed to the ultimate subject. Neither itself nor anything we can call a modification of itself, pretends to be either true or false. The judgment in fact is concerned with nothing but my mental attitude.

Either logic has nothing to do with modality, or modality affects S – P from the side of truth and falsehood. The ideal content must be referred to or else denied of reality. But the reference or the denial itself is simple, and can not be modified. What therefore must in some way be modified is the content itself. Not S – P but a transformed and conditioned S – P is the assertion made by logical modality.

§ 5. The modes of S – P which logic has to consider are three in number. In each case we assert, we refer some idea to ultimate fact, we begin the judgment by saying, "It is true," —but we go on to fill up the blank in each case by a different idea. It is true that S – P is actual, or is possible, or again is necessary. The idea pronounced true is "actual S – P," or "possible S – P," or "necessary S – P." These modes we retain for consideration, dismissing all others. But our choice is not really so arbitrary as it seems. We have here in a veiled and hidden shape the distinction of categorical and

hypothetical assertion. The possible and the necessary are special forms of the hypothetical; and between the assertorical and the categorical there is no difference whatever.

I shall begin by asking (i) the general meaning which in logic we assign to the predicates possible, necessary, and real. I shall then point out (ii) that the possible and the necessary have no real existence. But on the other hand I shall show (iii) that these modal assertions, though as such and in themselves they are not true of fact, must always rest on a basis of assertion which is true or false of actual reality.

§ 6. (i) We need not ask what we mean by (*a*) assertorical judgment. It is judgment categorical or unconditioned. "S – P is real," attributes S – P, directly or indirectly, to the ultimate reality. And on this point we have nothing to add to the explanations already given in Chapter II. The assertorical judgment may be dismissed from our thoughts. To draw a difference between a categorical judgment on the one hand, and on the other a judgment which asserts reality, is plainly impossible. The assertorical is simply the categorical, taken in contrast with the possible and the necessary.

§ 7. And these are nothing but phases of the hypothetical. What may be and what must be involve a supposition. Neither is declared to be actual fact: they both are inferred on the strength of a condition, and subject to a condition.

(*b*) It is easy to give the general sense in which we use the term *necessity*. A thing is necessary if it is taken not simply in and by itself, but by virtue of something else and because of something else. Necessity carries with it the idea of mediation, of dependency, of inadequacy to maintain an isolated position and to stand and act alone and self-supported. A thing is not necessary when it simply *is*; it is necessary when it is, or is said to be, *because of* something else.

And where necessity is "internal," this meaning is retained. For it is not the totality which in this case is necessitated. There is a diversity of elements contained in the whole, and these elements are divided into that which constrains and that which follows. In an unseparated world there could be no necessity.

§ 8. In a work on metaphysics the word "because" would

lead us straight to some fundamental difficulties, which will meet us again in our concluding Book. Is there any because outside of our heads? Is it true that one thing *is* by means of another, and because of another? Or are we forced to admit that every fact, while it *is* no doubt and is also perhaps *together with* others, is not an adjective depending on these others, has no real bond that fastens it to its environment, nor is subject to any alien influence? The objection would assail us: "'One fact is *and* another fact is,' so much is true; but 'One fact is and *so* another fact is,' must always be false. It is giving reality to mere ideal connections." And, if we escaped this objection, we should find another lying in wait for us. "You may say that one reality is the *cause* of another, and you may, if you please, add to this that the second is *because* of the first. But, if you venture to convert this assertion, and assume that whenever you have a *because* you have also a cause, you fall into error of the worst description. A cause is real, a because is ideal; you may have the one and do often have it, where the other is impossible. They do not always co-exist; and where they do co-exist, they do not always coincide; and where they coincide, they are not identical. They are not the same thing: they are not even two different faces of the same thing. They are nothing but counterparts, two parallel series which have no common points but possess some terms which have a constant relation" (Book III.).

§ 9. In a work of this kind we can not grapple with the problems offered us. We must here admit the objection and retire before it. We must admit that in logic "because" does not stand for a real connection in actual fact: we must allow that necessity is not a bond between existing things. For logic what is necessary is nothing beyond a logical consequence. Necessity is here the force which compels us to go to a conclusion, if we start from premises. The 'because" expresses an ideal process of mental experiment, which gives as its result a certain judgment. It does not guarantee the truth of this judgment, if you take it by itself. It does not guarantee the truth of the *data* which the process starts from, and on which it operates. A necessary truth

may be, and commonly is, categorical, but, so far as its necessity goes, it is hypothetical. It ceases to be hypothetical only when it ceases to be *merely* necessary.

§ 10. I admit it is not the same thing to affirm "*If* M is P *then* S is P," and "*Since* M is P *therefore* S is P." And the difference is obvious. In the latter case the antecedent is a fact, and the consequent is a fact: they are both categorical (Chap. II. § 71). In the former case the antecedent may be false and the consequent impossible. But the necessity in each case is one and the same. S – P *must* be true, if you take M – P, and take S – M, and draw the conclusion. That is all the necessity it is possible to find. The knowledge that S – M M – P are both true, and that S – P is a statement which holds of fact, falls outside the necessity and does not increase it. The hypothetical result becomes categorical by an *implied* addition. And the hypothetical *connection* may not even then become categorical. The bond of necessity is a logical passage, and to say that this logical passage itself exists in fact demands an assumption which can not be hazarded in the face of objections. In logic we must be content to say that, if the premises are categorical, the result is categorical. We can not add that this result is *necessary*, unless for a moment we treat the *data* as hypotheses, and mean no more than *If* S – M M – P are given, then S – P must *follow*.

§ 11. We are able to urge a two-fold argument to show that necessity is hypothetical. We can reason from principle, and again from usage. The argument from principle we may repeat as follows. Logical necessity is an ideal process, and you can not *assume* that either ideas or process are facts. Even if the ideas exist in fact, and exist in corresponding sequence, you can not *assume* that in this sequence your process exists. Your ideal operation works with ideas, and, so far as you know, it works only with ideas. The idea may be more than a mere idea, but it is *as* an idea that it goes into the experiment. And a mere idea is no more than a mere supposal. The result, so far as necessitated, is therefore so far *not* categorical. This we may call the argument *a priori*.

And we have in addition an argument from usage. A

necessary judgment, a statement introduced with "It must be so," may assert what not only fails to be actual but is plainly impossible. "If two were three then four must be six" presents us with a truth which is compulsory. The result must follow; it is necessary truth; but it does not follow in actual existence, and could not follow there, since both antecedent and consequence, and their actual junction, are impossibilities. It is not true that apodeiktic modality strengthens our assertions. It serves rather to weaken them. If S *is* P, there is an end of doubt. If S *must be* P, we know indeed that, given something else, we can be sure of S – P, but we are certain of no more. The apodeiktic mode either leaves our doubts, or removes them only by the covert assertion of the condition of S – P. Where the necessary asserts strongly it borrows its strength from a concealed assertorical. I will conclude this section in Sigwart's words. "There is a common idea that the apodeiktic judgment stands for something higher than the assertorical. It is believed that, if we start from the problematic judgment and ascend to the apodeiktic, we steadily increase the certainty of our knowledge, and add to the worth and dignity of our assertions. This idea must be relinquished. All mediate certainty must stand in the end on immediate knowledge: the ultimate premises of every proof can not be proved. The usages of life stand in comic discrepancy with the emphasis we lay upon apodeiktic certainty. The sayings 'It must be so,' 'It must have so happened,' are judgments apodeiktic: but the confidence they express has most modest limits." (*Logik*, I. 195.)

§ 12. (*c*) A necessary truth is a truth which results from assumed conditions. If we imply, as we very commonly do, that those conditions are actual, then the result is categorical. But, though the necessary may be real, its necessity is hypothetical. What have we now to say about *possibility?* When S – P is possible, does that mean that S – P would exist as fact, if something else were fact? Is possibility in short a form of hypothetical necessity?

It sounds strange when we hear that the possible falls under the head of the necessary. But it is at least as surprising to learn that the necessary may be impossible or

non-existent; and this we already know to be the case. On such subjects as these our first impressions may be worth very little.

The possible is that which is known or assumed to be the consequence of certain conditions. So far the possible is one with the necessary, where it is implied that the antecedent is real. But it differs in this point; for S – P to be possible all the conditions which make S – P necessary must be supposed, but only a part of them need be assumed to exist. It is implied that a part of the antecedent exists, but as to the other part we are left in ignorance. Thus the *partial* existence of the conditions of S – P is the *differentia* which separates the species "possible" from the genus "necessary." Take a judgment such as this, Given *abcd* then E must follow. Add to it the judgment, or the supposition (§ 15), that *ab* exists, while *cd* is not known to exist, and we get the possible. E is now a possibility. We have an assumed fact *ab*, we also have ideal conditions *c* and *d*, assumed to be compatible with *ab*, but not taken to exist. We have a hypothetical judgment, Given *abcd*, we should have E. And from this, by the assumption that *ab* exists, we pass to "We may in fact have E." In other words *ab* is the "real possibility" of the possible E. It is known to be real, or at least is treated as if it were so known (§ 15).

§ 13. Everything possible must be *really* possible. It must stand on a reality assumed to exist, and taken as part of that sum of conditions which would make S – P an actual fact. Possibility apart from or antecedent to the real world is utter nonsense.

But the basis of fact may vary indefinitely. S – P is possible in the highest sense when the detailed conditions which make it necessary are fully known, and a part of these detailed conditions is also taken to exist. This highest sense sinks by slow degrees to the lowest of all, where "possible" stands for "not known to be impossible." Here we do not know what special conditions give S – P. Our basis of fact is nothing but the assumption that the nature of the world admits S – P. Because reality does not in our knowledge exclude S – P, we take reality as one existing condition of S – P, and we assume

not only that the rest may be found, but also that they are compatible with reality. In this lowest and barest sense of possibility it is really wrong to call S – P possible. It is better to say, We do not know that S – P is impossible.*

Between these extremes come many degrees. In the hypothetical judgment about S – P we may not know the special conditions of S – P, but we may know a smaller or greater amount of them, and, where we are ignorant, we may have more or less reason to make an assumption. And in respect to the partial existence of these conditions, our knowledge admits of many stages, and we make assumptions with grounds that may vary almost indefinitely. We should gain nothing here by dwelling on these varieties, and prefer to give some simple illustrations.

§ 14. Are disembodied spirits possible? Let us agree to take the most unfavourable view for the sake of argument. We have no direct experience of the existence of such spirits, and the question is whether we can call them possible. We know no conditions which would give the result. We have no reason to think such imagined conditions compatible with the real nature of things. On the other hand we can not reject the idea as impossible, since we have no right to affirm "It is incompatible with the nature of things." We should content ourselves with saying, "Your proposed assertion is not certainly false, but there is no ground for thinking it true. Our ignorance is forced to admit a 'bare possibility,' but it gives not the very smallest reason for entertaining that idea as real. And such bare possibilities, we have seen, are none; they "are idle frivolities, that have no place in the minds of reasonable men."

The case we have given is, as we have given it, an example of the lowest sense of "possible." Let us go a step higher. "It is possible that some of the planets are inhabited." We have here the hypothetical judgment that under certain conditions life would result; and to some extent we know these conditions, while we supplement our ignorance by assumptions for which we have reasonable ground. These

* We rest our assertion on a privative judgment. Cf. Chap. III. § 8, and p. 198.

special conditions again are in various planets known to exist in part and in different amounts. Our judgment that this or that planet may be tenanted thus varies through different degrees of possibility, according to the amount of this partial existence.

But now take the assertion "That coin may have given head." Here we know, on the one hand, special conditions which must exhibit head, and we know on the other hand that part of these conditions really exists. This is possibility in its highest form.

§ 15. We have noticed that possibility may stand not on fact but on supposition. If a coin had three sides, then it would be possible that neither head nor tail should be uppermost. There is here no vital change in the meaning of "possible." For the real basis is supposed to exist, and the possible is subject to the supposition. But we should not here say that S – P *is* possible; we can not strictly go beyond "It *would be* possible." It is possible, *if* by a fiction of thought you treat the unreal as if it were real, or the unknown as if it were known. We must distinguish such hypothetical from actual possibility. For, just as we more commonly imply that the necessary exists, so we imply and must *ordinarily* even be taken to assume that the ground of the possible is actual fact and not merely supposed.

§ 16. We have now discussed the meanings of "possible" and "necessary," so far as to see that both are forms of the hypothetical. And with this conclusion we have anticipated the result of our second enquiry, Does logical modality exist in fact?

(ii) We saw long ago that hypothetical judgments, as such, are not true *in rerum natura*. Neither the subject, nor the predicate, nor again the connection, need exist in fact. What is true of fact is the quality that forms the base of that connection. The junction itself may be non-existent and even impossible. We shall verify this result in the possible and the necessary.

§ 17. (*a*) We have seen that what must be is never necessary save on the hypothesis of some condition. We have seen that this antecedent, and the consequence which follows,

may claim no existence and may have no possibility. The necessity in these cases, if we mean the necessary connection of the elements, does not exist outside our ideas; it is not true of fact.

And again, when the antecedent and with it the consequence have actual existence, and appear in a relation which is clearly the counterpart of logical necessity, the same result holds. We saw that the difference between the cause of knowledge and the cause of existence staggers our assumptions. And even when the two seem to us to coincide, how can we assume that they are ever identical? It is a great thing to say that what is true in thought must hold in fact. But it is something more to maintain that thinking and existence appear as two sides of a single reality, and to insist that every logical process must be found in fact, and that all real connection is, if we could see it, a logical process. We shall recur to these questions in a later Book. For the present we may repeat that, if such a doctrine is tenable in metaphysics, it can not be supported in a logical treatise. The objections it calls forth, if they could be disposed of, could be disposed of only by a complete revolution of our current doctrine as to mind and things.

For logic the necessary must remain the hypothetical. Facts for logic must be facts that *are* and that never *must be*. The real connection which seems the counterpart of our logical sequence, is in itself not necessary. It is necessary for us, when in ideal experiment we retrace the process of actual fact. But, at least in logic, we must not assume that our ideal relation is the bond of existence. The ideal compulsion of logical necessity is as strong where the premises are known to be false, and the antecedent can not be believed to exist, as where we start from categorical truths and pass from them to a categorical conclusion. If in both these cases there is logical necessity, how can we ever be safe in assuming that such necessity is found in existence?

§ 18. (*b*) And when we pass from the necessary to the possible, our conclusion remains. The possible, as such, exists nowhere at all but in the heads of men. The real is not possible unless for a moment you think of it as unreal. When

the possible becomes real it ceases at once to be a mere possibility. For metaphysics I will not deny that the possible *might* bear another meaning. But for logic, wherever a fact appears, a possibility vanishes. It is not merely that the possible is confined within the limits of human thinking. It can not exist outside the domain of human doubt and human ignorance.

We have seen that to say "S – P is possible," means, "S – P would follow under certain conditions, some at least of which are not known to be present." And at this stage of our enquiry, we may say at once that the sequel of such a hypothetical judgment can not be taken to have actual existence. The antecedent is not fact, the connection is not fact, and the consequence is not fact. Or, if they are fact, their "factual" character must be either unknown or put out of our minds, when we treat them as possible. If we knew the reality we should make no supposals; or, if we made them, we should know that they were *made* and, as such, did not exist.

§ 19. Common usage enforces our conclusion. The accused obviously is guilty or is not guilty (Sigwart, 228). But we say "It is possible he may be either." That is grossly false, if you take it as asserting about the fact A fact is not and can not be an alternative. The possible existence of both guilt and innocence is relative to our knowledge; it exists only in our heads, and outside them has no meaning. A ship has sailed from Liverpool for America, and we say "It may have arrived in New York, or again it may be at the bottom of the sea." If you make this statement of the actual fact, it *can not* be true. It is not possible that a ship should be in two places at once. It must actually be somewhere; and, being actually there, it is not possibly elsewhere, nor even possibly where it is. The possibility is nothing beyond a supposition founded on our real or hypothetical ignorance. Outside that ignorance and that supposition it is not anything at all.

§ 20. We have now shown in the first place that "necessary" and "possible" are both hypothetical. We have seen in the second place that, at least for logic, they do not exist, as such, in the world of fact. It remains to show

that, although "subjective," they must rest on a basis of categorical assertion about reality.

(iii) We have only to recall the doctrine we reached in our Second Chapter, to perceive at once the truth of this conclusion. We saw there that all judgment in the end was categorical. The basis of the hypothetical must be fact, and without that basis the judgment would be false.

(*a*) We need give ourselves no pains to verify this result in the case of necessity. We have seen that "S – P is a necessary truth" means "S – P follows from something else." This something else need not be fact, and, where it is fact, that can not be assumed to make any difference to the ideal connection. We can not say "In fact S – P really is a necessary consequence as such." But, the connection being hypothetical, it on the other hand demands a basis which is categorical. All necessity affirms a real ground explicit or implicit. It thus so far has actual existence, not in itself, but indirectly and simply in its ground (Chap. II.).

§ 21. When we come (*b*) to the possible, we are tempted to think it has less actuality than belongs to the necessary, since a part of its conditions remains unspecified. But, unless we imply that the antecedent of the necessary exists in fact, such a comparison would be illusory. In neither case can we assume that antecedent or consequent exists; and when we pass from what must be to what only may be, the ground of the judgment seems in either case to be equally real.

In the merest hypothetical possibility we have an assertion about actual fact. We affirm the necessity of S – P following from *abcd*, conditions a part of which is supposed. And in this we attribute the base of that connection to ultimate reality. But in an ordinary assertion of possibility we imply the existence of a part of *abcd*, and thus make another statement about fact. What we do in a case of so-called *bare* possibility again is this. We first, on the strength of a privative judgment (§ 13), conclude that the conditions are compatible with reality. We then get the *existence* of a part of these unspecified conditions by taking the real (*because* it is compatible) as a joint condition. Thus reality,

taken in some unknown character and passing into the conditions, gives partial existence unknown to the antecedent; while the same reality, in another character, then guarantees the hypothetical sequence of S – P. We thus in the end (whatever we may think of them) have two categorical assertions.

In "A disembodied spirit is possible" we start by denying that it is impossible. This judgment rests, first, on the assumption that the real has an actual unknown quality, which, in the second place, if you take it together with other unspecified conditions, makes a hypothetical antecedent from which "disembodied spirit" follows as a consequence. As the ground of this second judgment we have to attribute another unknown quality to the real to serve as the basis of the hypothetical connection. We have thus two assertions about the nature of things.

§ 22. Let us now take an instance of rational possibility. If we say "It is possible A holds the ace of trumps," we know there are conditions which would give this result. Such or such an arrangement of the pack, such or such adjustments of the muscles in the person who cuts and the person who deals, *must* give the ace to A. The ground of this judgment consists in mechanical and other laws, in accordance with which the result would follow. These laws we regard as qualities of the real, and this is one of our assertions. We next affirm that an event has happened, viz. the dealing of the pack, which presents in fact a certain part of our antecedent; in other words, which gives reality to our supposed conditions to a certain point and within a limit. The antecedent is not actual in that full and especial form which gives the ace to A, but it is there in that outlined and partial character which gives the ace to some one player.

Everywhere, where we say that S – P *is* possible, we assert a real possibility of S – P. We must assume a fact which actually is, though it is not S – P. And we assume that this fact would under some conditions give us S – P. That is, we categorically assert the ground of an hypothetical judgment; and again we categorically assert the existence of a fact which forms part of the antecedent. These two positive assertions can everywhere be found in the most guarded statement about

an actual possibility; and the former is required for mere hypothetical possibility.

We have now accomplished the third task we set before us. We have shown that the necessary as well as the possible has a basis in fact and depends upon experience. A modal judgment has to make an assertion about reality. But the judgment itself expresses a truth which is not a fact. Modality is but hypothetical, and hypothetical connections exist only in our thoughts.

§ 23. There are various points in connection with the subject which claim our attention. We are accustomed to hear of "capacities" and "faculties," and to use such phrases as "potential energy," with but little regard for their actual meaning. The "potential" is regarded as something real, stored up outside existence, which hereafter may emerge in the world of fact. This deplorable piece of effete metaphysics takes a leading place in popular versions of the truths of physics. Potential energy of course as such has no real existence. It is merely the consequence in a hypothetical judgment where the conditions are not all taken as actual. It would be better to say, "Though there is no energy, there is something actual which exists as the real possibility of energy." But even this correction leaves a residue of error.

In strictness of speech a real possibility of S – P can not exist as such. It should mean that reality which, *if you place it in an ideal construction*, developes S – P as a consequence. Itself is fact, and the attribute at the base of the hypothetical judgment again is fact: but that judgment with its elements can not be taken as fact. We are met by this dilemma. Apart from the judgment the real is mere fact and has no potentiality; but within the judgment the reality itself has ceased to be real. It has taken its place in a mental construction. Unless you are prepared to make ideal elements determining forces in the processes of nature, you can not properly believe in real possibilities. And I think, upon any metaphysical theory, it would be better to find some other expression.

§ 24. But I shall hear: "Conditions are surely real. Before

life began its conditions could be present. And the real possibility being a condition, as such you must allow it to exist." In the above I see nothing but the same mistake. A condition as such can not be said to exist. A condition is an element in a hypothetical judgment and, outside that judgment, it is no condition. If you say, "A exists and *is* an actual condition of B," you are speaking inaccurately. What real bond corresponds to your phrase? B *is* not in existence, and if the other conditions do not appear, it will not exist. And yet you say, "A *is* one of its conditions." If you wish to be accurate you should say, "A is something which, if taken from existence and placed within an ideal construction, mentally gives rise to B." All beyond is unwarranted.

A condition *ex vi termini* does not as such exist; and to define the cause as "the sum of the conditions" is to commit a serious metaphysical mistake. It is saying, "The reality which gives rise to reality is made up by adding mere ideas together." * But the cause must be fact, and its effect must be fact. We should do better to call the cause the meeting of elements which, in the moment of their union, begin a process which issues in the change we call the effect. An actual union of actual elements is the cause. Each element by itself and apart from this union *is* not even a condition. It becomes a condition when you place it ideally in union with others. But, in order to do that, you must make it an idea. In its character of condition it must so far cease to be fact.

I am far from suggesting that the want of accuracy I have just been noticing is always error. The phrases "potential" and "condition" and "possibility" may be harmless and useful. We ought all to be able to employ them safely. But I fear that too often the case is otherwise. Too often they prove mere engines of illusion, drowsy sops thrown down to make reason slumber. If we believe in something that neither is nor is not, but rules some strange middle-space between

* Of course the word *sum* again is open to criticism. It implies a theory of the union of the elements, which certainly can not be taken for granted. But to clear up this point a long digression would be wanted. There are some remarks on causation in Book III. II. Chap. II.

existence and nothingness, let us at least have courage to profess our opinion. Do not let us use words in using which we take refuge from doubt in blind ambiguity.

§ 25. It was blind ambiguity and little beside that lay at the root of a controversy we remember. Amongst those who vexed themselves and others with disputes on the "Permanent Possibilities of Sensation," how many adopted the obvious course of asking what lay hid in this spell? We know now that a *real* possibility means something which, in itself and in fact, is no possibility, but must be something actual. It is a veritable fact which actually exists; and to this we must add here the idea of *permanence*. I suppose this means that our actual fact has, against something else, at least a relative duration and freedom from change. But now *what* is this real or, I should say, these reals, which do not change, and which an attribute of the reality guarantees to produce the consequence of sensation, so soon, that is, as you have transformed them into ideas, and placed them within ideal constructions? Are they real things, as distinct from sensations, or, if not, *what* are they? I do not say that the asking this question is enough to explode the theory of J. S. Mill. I will say that the answer to it, *however it is answered*, must alter at least the statement of that theory, and change at least some of the points in dispute.

I must be pardoned for seeing in another use of this delusive phrase an ambiguity which threatens the conclusion. If there are difficulties in the way of making pleasure, in the sense of atomic and momentary feelings, the end of life, can we be said to escape them if we say Happiness is the end, and if Happiness is defined as a permanent possibility of pleasant feeling? We are met by the objection, If the end is pleasure then it surely must lie in actual pleasure. But if it lies in actual pleasure, it can hardly lie in mere possible pleasure. *Either* the end is pleasure present and actual, such pleasure again as has a quality (itself also pleasure) which guarantees a hypothetical result of ideal pleasure, *and* this present pleasure is also *permanent*—either this, I say, or Hedonism is given up, for something *not* pleasure is made the end. Here again I must venture to make the remark that the answer to

the objection must modify at least the statement of the doctrine.

§ 26. We may turn from these criticisms to a positive result laid down by Sigwart (182, 227), and which our discussion of possibility should have served to make clear. The particular judgment, in the end and really, we found to be nothing but a hypothetical in which the conditions remained imperfect (Chap. II.). In the problematic form of judgment we once again encounter the particular. The one is the other under a disguise which disappears before our scrutiny. The particular judgment "Some S is P" is the same as the judgment "S may be P." The assertion that S does actually exist is not contained in the particular judgment, any more than it is in the problematic. "Some S is P" asserts no more than that, S being given in ideal connection with other conditions, of which conditions some part is assumed or supposed to be actual, then P will follow. And this is precisely the sense of "S may be P." Both are imperfect hypothetical judgments, and both are founded on a basis of fact believed in or supposed (§ 15).

§ 27. Reality in itself is neither necessary, nor possible, nor again impossible. These predicates (we must suppose in logic) are not found as such outside our reflection. And to a knowledge and reflection that had command of the facts nothing ever would be possible. The real would seem necessary, the unreal would seem impossible.

The impossible is that which must be unreal. We might call it, if we chose, one kind of the necessary. When we say of S – P that it can not exist, we do not merely mean that in ideal experiment the suggestion of S – P directly vanishes. We suppose for a moment that S – P is real. Then on that hypothesis we see that the conditions from which alone S – P would follow are directly or indirectly incompatible with the real. The real, if changed in ideal construction so as to afford the conditions of S – P, is changed in such a way as to cease to be itself. The alteration removes some attribute that we assign to the real; and this attribute, in our reflection, by means of its exclusion of other possibilities, thus generates the impossible and becomes the necessary.

Impossibility and necessity are correlative ideas. They

emerge together. The real does not seem necessary until it has excluded what is incompatible, and reasserted the attribute which is the ground of the exclusion. Because of this attribute nothing else can be, and the attribute must be because nothing else is. The unreal again is not impossible until we have seen, not merely that it fails, but that its supposed success would destroy what is, and what must be because its opposite is excluded.

§ 28. These ideas suggest a number of difficulties. In a later book we must return to one of them, and may content ourselves here with a brief indication. The impossible we see must always imply a positive quality, known or assumed to belong to the real. If X is impossible, this means and must mean that an actual X would remove by its presence some positive attribute we take to be real.

This bears on a point which already has engaged us (§§ 13, 21). The possible may be taken as anything whatever which is not real nor yet impossible. We objected to this process, as frivolous in its result and insecure in its method. The method is insecure, since it passes from the absence of known incompatibility to the assumption of compatibility. We take X to be compatible, if the real, as we know it, will pass unabridged into a set of conditions which give X as a consequence. Again, so far as we know, X is *not incompatible*, when the suggestion of X as an attribute of the real calls forth no answer affirmative or negative. And the doctrine we object to passes direct from want of incompatibility to compatibility. In the one case X is possible, since it follows from conditions a part of which is supplied by the real. But in the other case we can say nothing about reality, unless we make an enormous assumption.

§ 29. We offer our suggested X to the real, and the real is passive: X is not excluded. This privative judgment, if we wish to understand it, must be reduced to an ordinary negative where a positive quality in the subject rejects. What is the positive quality here? It is the mental presence of the real with such and such attributes. Now even the smallest addition to these present attributes is an alteration of the real, as we have it in our minds, against which it asserts itself in the character it bears at the actual moment. In other words,

the base of our assertion that X is *not* rejected by the real, is the assumption that the real differs in no point from the real as at this moment it is present.

Now it is one thing to say "Whatever I judge true holds good of reality," and another thing to say "What I fail to judge true is absent from reality." And there is this very great difference between them. In the first case we assume that, whatever *else* may be, at least so much is true. In the second we go so far as to say that what we have in our minds is co-extensive with reality. But, if we hold to this, we ought to go further. What the real does *not* exclude is not possible, it is actual and necessary (p. 143) And if we shrink from this assertion, ought we to maintain that X is even possible?

§ 30. The mistake is apparent. A privative judgment (as we saw in Chapter III.) is not true of a subject, if that subject is confined to something without the sphere of the predicate. It then becomes obviously frustrate and unmeaning. You can not predicate absence unless you predicate the positive space from which the absent is lacking (Chap. III.). We shall find that this holds good of ultimate reality. To say of it, "It is without the rejection of X," is to say of it something which has no meaning unless, so to speak, the place left empty by this mere privation is occupied by a positive attribute. We ought to be able to say There is a quality the presence of which guarantees, or goes to guarantee, the absence of the exclusion of X. But this quality would obviously be either the presence or compatibility of X. It is on the ground of this presence or compatibility that we ought to assert the possibility of X. For otherwise we fall into circular argument.

I will give an illustration. Suppose I were to say that an isosceles triangle with three unequal angles is certainly possible, and possible because it is not impossible. The universal triangle, so far as I am supposed to know it, tells me nothing about the nature of the isosceles. On the privative judgment that the universal triangle does not reject my idea, I call it possible. Is not this absurd? It is absurd, because a privative judgment, where the subject is left entirely undetermined in respect of the suggestion, has no kind of meaning. Privation gets a meaning, where the subject is determined by a quality

or an environment which we have reason to think would give either the acceptance or the rejection of X. But, if we keep entirely to the bare universal, we can not predicate absence, since the space we call empty has no existence.

§ 31. Or if our privative judgment has a meaning, then it has a false meaning (Chap. III.). It rests on a confusion between the universal and its psychological existence. We take the idea, as we find it existing within our minds as a psychical event, and then confound the determination it so gets with its logical qualities. We say Here is a fact, and we can not find that it does reject X. But the answer is simple. In the first place we have the *reductio ad absurdum*. Since the real has a quality on the ground of which it must accept or decline every possible suggestion (Chap. V.); and since the real here *ex hyp.* does not decline, it therefore must accept. X is not possible, it is actual and necessary. In the next place we directly deny the premise. In your experiment you have not got the reality, and you ought to know that you have not got it. If you wish to determine your empty universal so as to get an answer in regard to X, you have nothing to do with the psychological setting of this universal. The psychical environment is not the space which, in respect to X, must be full or empty. It is quite irrelevant and must be discarded. You must fill out your idea by adding to its *content*. When the content is supplied to such an extent that, in saying, "Rejection of X is still absent," you mean that some of the conditions of X are already present—when you mean that there are qualities which do affect the prospects of X, that a part of that attribute, which when complete will accept or reject X, is already there and that part is favourable—then I admit you may found possibility on your privative judgment. The complaint I make is that your proceeding is frivolous. You have in your hands the positive ground on which your judgment is based directly, and you choose to proceed in a way which is indirect and in this case circular (Chap. V. § 28).

We should never trust a privative judgment until we have seen its negative form. We should never trust a negative judgment until we have seen its affirmative ground. We should not take our impotence as a test of truth, until we at

least have tried to discover the positive counterpart of that failure. The observance of these rules might preserve us from errors which sometimes are dangerous.

The relation of necessity and impossibility to our mental impotence is a subject which would carry us beyond the present volume. We shall add some remarks in our concluding Book. In the present chapter we have yet to see how modality is the passage from judgment to reasoning. But, before we indicate that transition, we must rapidly deal with a most important application of modality, so far at least as to show its connection with our general view.

§ 32. If Logic professed to supply a method for the discovery of truth, the logician could not mention the theory of Probability without shame and confusion. The fruitful results of the modern rival would offer themselves in damaging contrast with the sterility of the old and privileged veteran. And, where a true view of the claims of logic makes this contrast impossible, the logician, it may seem, has no right to trespass within the limits of another science. The objection is heightened when the writer on logic confesses himself unacquainted with mathematics. He may appear in this case to be talking about things of which he knows nothing.

But the objection rests on a misunderstanding. The principles on which probabilities are reckoned, the actual basis and foundation of the theory, are not themselves mathematical. Before mathematics can deal with the subject some assumptions are necessary; and, though these assumptions can be justified by their results, it is desirable to examine them simply by themselves, to see what they are and whether they are true. An enquiry of this sort, by whomsoever it is made, is a logical enquiry.

§ 33. Probability, we know, has to do with possibilities. And starting from this, at the point we have reached, we can go at once to an important result. No statement we make about probabilities can, as such, be true of the actual facts. This is half the truth, and we must not forget it. But it is not *more* than half, nor is it even the half best worth remembering. It is just as true that an assertion about chances does make an

affirmation about reality. Every hypothetical judgment, we have seen, must rest upon some categorical basis. The conclusions we have adopted enable us to say without further enquiry, Any theory which calls the doctrine of chances merely "objective," or merely "subjective," is certainly false. It is a vicious alternative which, if it were sound, would upset general results we have found to be true, and which is contrary to the special facts of the case.

§ 34. I shall return hereafter to the consideration of this root-mistake, but it is better to begin with a statement of the truth. We are to omit the subject of probability in general, and confine ourselves to the particular instance of that which is called mathematical probability. And the point which first presents itself to our notice, is the necessity of limiting the possibilities. Before we can advance a single step we must have the whole of the chances before us. This exhaustive survey may rest on knowledge or on arbitrary assumption, but it is always presupposed. The calculation of chances, in a word, must be based on a disjunctive judgment, and the hypothetical assertions, which represent the chances, take place within the bounds of that judgment. But disjunction, as we know (Chap. IV.), implies a categorical foundation. This basis of fact is the condition of our assertions about the chances.

§ 35. Take a simple instance. A die has been thrown without our knowledge, or is now about to be thrown before us. As a previous step to reckoning the chances we must make some categoric statements. We must be able to say, The die will fall (or has fallen), and will fall beside in a certain way. It must have one side up, and this, whatever else it is, will at least be not other than all these six sides. It must have a quality determined as what is common to the six, and not determined as what will be none of them. On this categorical foundation all the rest is based, and without it there is no possibility of advance.

This result has a most important application. There is no probability before all reality. There is none which does not stand on a basis of fact assumed or actual, and which is not a further developement of that basis.

§ 36. We have seen the foundation of our disjunctive judgment. What is it that completes it? It is of course the setting out of exclusive alternatives. These alternative possibilities are given us in the various hypothetical judgments which we are able to make as to the number on the face which we know is lying uppermost, or which will so lie. We have now a disjunctive judgment, enclosing an exhaustive statement of exclusive possibilities. But we have not yet got to mathematical probability. To reach this a further step is to be made. We must take the possibilities all to be equal, or, if they are not equal, we must make them comparable.

§ 37. The possibilities must all be equally probable. What does this mean? It means that there is no more to be said for one than there is for another. The possibilities are each a hypothetical result from certain conditions; and these results are equal, when, in the first place, they follow each from no more than one single set of conditions, and when, in the second place, I attach no more weight to any one set than I do to the others. When, in short, I have no more reason for making one hypothetical judgment than I have for making any other, they are possible alike and equally probable.

X must be *a* or *b* or *c*. X qualified by certain conditions would be *a*, if qualified by other conditions would be *b*, and so with *c*. If in my knowledge I have any ground for taking X in one set of conditions rather than in another, then *a*, *b*, and *c* are not equally likely. If such a ground is absent, then they are equal. Again, if X will give *a* with a single set of conditions, and *b* or *c* with more than one set, the chances are different in the different cases. Otherwise they are the same.*

§ 38. If the separate alternatives are not found equal, then we must either give up our attempt to reckon chances, or must find some common unit of value. We must analyze one possibility, and find, perhaps, that its final result is really two; or that, though the final result is one, it will follow from two or three sets of conditions, and hence can stand for two or three units. In these cases there were two hypothetical judgments

* Wolff has expressed the principle very well, "Probabilior est propositio, si subjecto predicatum tribuitur ob plura requisita ad veritatem, quam si tribuitur ob pauciora."

which we joined in one. Again, if we can not divide the greater, we may join the smaller. By considering two or more alternatives as one, we raise the whole to a unit of higher value.

§ 39. Where we have a disjunction the alternatives of which are equally likely, or are reduced to alternatives which are equally likely, we can state the chances. Since we have the same ground to think every possibility true, the probability of each is just the same quantity. In our knowledge they divide the actual fact between them equally. The reality then we represent as unity, and each alternative possibility we represent by a fraction, of which the denominator is the number of equal alternatives, and the numerator is one. Against our belief in the general fact we have nothing to set. Against any one of its developements we have to set the whole of the others.

§ 40. Take the instance of the die. We know it will fall in a certain way. So much is categorical, and we have now to determine the further possibilities. What are the conditions from which in each case our hypothetical results proceed? They are first the general character of the fall, those positive and negative general conditions from which comes a fall with one of the six faces up, and no more than one. Do these furnish a ground for making one fall more likely than others? Clearly they do not.

The general conditions, which we have considered so far, are known to exist. The fact must take place in such a way that these conditions will be realized. But, beside this known element, there are a number of circumstances about which we are in doubt. The particular throw must be the result of one particular position of the die, the contraction of particular muscles in the thrower, and the character of the surface which receives the fall. The number of different sets of conditions which would lead to the result, is very great, and in part perhaps unknown. Still this makes no difference. They are all at least known or assumed to be compatible with the reality, and they lead indifferently to any *one* of the six results. With respect to each face we have exactly as much reason to think it uppermost, as we have to think any other face

uppermost. The chances are equal; and since they are six, and since they divide the sphere of a single unity, they are each one-sixth. We have a certain reason to expect one face, say for instance four, but we have the same reason five times over *not* to look for four.

§ 41. Now suppose one face loaded. The final possibilities are still six in number, but their value is not equal. There are more sets of conditions, which would lead to the loaded face being downwards, than sets which would bring the opposite face into the same position. I have thus more reason to look for one than I have to expect the rest. My task is now to get a fresh unit by breaking up some or all of the possibilities. If I succeed in this, the whole will again be divided into fractions expressing the respective chances, but these fractions will be unequal. The units of reason to look for each face will be more in one case and less in another.

§ 42. The above is, I think, the entire foundation of the doctrine of chances. It is perfectly simple and entirely rational. It need not appeal as a warrant for its existence to those splendid successes which make it indispensable. Rightly understood its principles by themselves are abundantly clear and beyond all controversy.

We have no cause and no right to follow the theory even into its first and most simple applications, but we can not pass over an important point. Where we can not determine numerically the conditions of different possibilities in a way that is direct, we can proceed indirectly. For example, in the case of a loaded die, I may have no *data* for calculating the chances, since I may not have accurate knowledge of the conditions. But I can go to the result in another way. I can throw the die a number of times, and, setting down the numbers for every face, can then in view of an unknown throw state the fractions in accordance with the relations of these numbers. But this inverse process implies no appeal to a different principle.

Let us perceive its nature. I assume that I have no reason whatever to think the unknown throw, which I wish to determine, different from the rest. I therefore take it as simply the same. But I can not take it as the same as any *one*, for then

it must be different from others. It is therefore the same in its general character, with possible alternatives which fall within the *data* supplied by the actual series. It remains to reduce these possibilities to fractions.

We are obliged to reason from effect to cause. If a known cause A would produce a given effect, and if we have no reason whatever to believe in any other cause, we assume we can go from the effect to A. The effect we are considering is a certain series, and the question is, Do we know the one cause which would produce that series?

I hardly think we do. However long and however regular the series may be, we can never say that there is one and but one disposition of elements, which leads and must lead to the series we have seen. And if we could say this, and assume beside that the unknown throw will follow from this determinate cause, then there would no longer be any *probability* in the case. The whole thing would be understood and certain. But we obviously do *not* know this one special cause which would produce our series. We can determine no more than its *general* character. It must be such a cause as would give a series possessing certain numerical relations. And we assume that an arrangement of which we can say, "It is the real possibility, with respect to any throw, of chances disposed in those numerical relations," is such a cause. It is therefore probable that the series is the effect of this cause. And since (by another assumption) we have no reason to believe in any other cause, it is certain that the series has resulted from this cause. And since again we assume that the unknown throw has a general character the same as that possessed by the series, we proceed without any further hesitation to reckon its chances directly.

§ 43. We may notice in passing that, if we had to suppose that the series might arise from some other cause, beside the one we have already mentioned, a further complication would be at once introduced. But this we need not consider; for the most simple case of inverse or inductive probable reasoning proceeds as above, and is sufficient to show the principle employed. And we may notice again that there are assumptions involved, which we shall have to discuss in a following

section. We may here remark that, if we are not satisfied with a probable conclusion, if we go on to assert that the series has actually been produced by a cause of a certain character, which will operate again in the unknown throw, our assumption is doubtful, if it is not false. But, to resume, however this point may be decided hereafter, the nature of our reasoning on chances is the same in inductive as it is in deductive probability. The chances of the new throw represent the proportion of our grounds for belief. The fact that these grounds have been supplied by a series, and the reduction of that series to its actual or probable cause, makes no difference to the principle. What grounds have we got for determining the throw that is to take place? Those grounds which as causes have determined the known series. What are those grounds? They are those from which we go to the series in hypothetical judgments. What is the nature of these? We do not know them exactly, but, so far as known, we can arrange them as units, and groups of units, which stand to one another in certain relations. But grounds for belief, which stand to one another in numerical relations, are what we mean by the chances of the throw.

§ 44. From this hurried account of the general nature of what has been called the Logic of Chance, we pass to the removal of erroneous ideas. It is evident, in the first place, that probability does not affirm about the fact as such. The event may be past and absolutely fixed, but our alternatives continue to be truly asserted. But, on the other hand, if the chances are not facts, are they nothing at all but our belief about facts? Is probability simply the quantity of the belief we happen to possess? No, that once more would be incorrect. We need not trouble ourselves to discuss the meaning assignable to "quantity of belief," for the whole idea must be banished at once. The amount of our belief is psychological, the probability of a fact is always logical. No matter what it is we happen to believe in, whether it exist or do not exist, our belief itself is unaffected. But an assertion about chances must be true or false. It depends on fact and refers to that, though it is not true or false of the special fact in question.

§ 45. We have not contradicted ourselves. Probability tells us what we *ought* to believe, what we ought to believe *on certain data.* These data are assertions about reality, and the conclusion as to what we ought to believe results from a comparison of our grounds for belief. Since these grounds are the conditions of hypothetical judgments, the judgments again must be true or false, and they rest upon categorical bases. In these two points, (i) the general ground of the disjunction, and (ii) the special grounds of the alternatives, probability is true or false of reality. We may call it "objective."

On the other hand probability is "subjective." If I say "The probability of S–P is $\frac{1}{10}$," this may be true although S–P is impossible. It is true to-day, and to-morrow it is true that the chance is $\frac{1}{12}$, and the next day $\frac{1}{7}$. The belief must change with my varying information, and it is true throughout these variations, and is true though every one of them is an error. How can this be "objective"? It seems to lack the very *differentia* of truth.

The solution is obvious. Within the probability what is true or false is not the premises but the conclusion I draw from them. Given certain assumptions, there is only one way of stating the chances. Given certain grounds for belief or disbelief, there is only one correct inference to the fractional result. This result is neither "subjective" nor "relative," if those phrases mean that it might be different with different men. From certain *data* there is but one conclusion, and, if this is different in different heads, then one or both of these heads is mistaken. Probability is no more "relative" and "subjective" than is any other act of logical inference from hypothetical premises. It is relative to the *data* with which it has to deal, and is not relative in any other sense. It starts with certain assumptions about the nature of the fact, and it tells us what, if we are ready to take these assumptions as true, we ought to believe in consequence. If this is not to be "objective" and necessary, then farewell for ever to both these phrases.

Probability as such is not true of the fact, but it always has a reference to fact. It is concerned with certain special deductions from the basis of propositions which are true or

false in fact. It certainly is confined to those deductions. But it possesses, when kept within its own limits, truth absolute and unquestionable and that never can vary.

§ 46. Probability is neither simply "subjective" nor yet simply "objective." This vicious alternative is the first of the errors we have to dismiss. It is allied to another elementary mistake, which must next engage us.

It is mere misunderstanding which supposes that chance involves a series, and that the logic of probability is essentially concerned with statistical frequency. It is mere error which finds the necessary meaning of "The probability of S–P is $\frac{1}{4}$," in "Once in a series of four events S–P will be true." This mistaken theory contains some truth, but has taken one part of the truth for the whole.

§ 47. Is the series real or is it imaginary? Let us first take it as real, as something that exists, has existed, or will exist. Must the judgment "The chance of S–P is $\frac{1}{4}$," refer always and essentially to an actual series? The assertion would be preposterous. The event S–P may be hypothetical. It may have a probability of $\frac{1}{4}$ on the ground of assumptions which we know are not true. Where is then the real series? The event again may be unique. The chance of my dying before I am forty is, say, $\frac{1}{3}$. Does this mean that if I die three times, one case will realize the possibility? The event once more need not be an event. It need be nothing which ever could happen in time, and we should deceive ourselves if we gave it that name. "It is even chances that the soul is nothing but a function of the body:" the probability is $\frac{1}{2}$. "It is one to two that God is a person:" the probability is $\frac{1}{3}$. "It is one to ninety-nine that the will is free:" the probability is $\frac{1}{100}$.* It may be said, no doubt, that the figures are illusory, and that we can not find any unit of value; but I hardly think this objection can stand. Admit that the case is highly improbable, it still is possible that in the mind of some man the grounds, present for and against such judgments as these, might be reduced to a common denominator. How can we deny it? and, if we do not deny it, what becomes of our series?

* Of course I do not mean these fractions as an expression of my opinion.

§ 48. The series clearly can not be real. Let us take it as imaginary. The question is then, Is such a fictitious imaginary series the proper way in which to represent probability? Can we say, It is my meaning, or the only true way in which to render my meaning? This, I think, would be an absurdity. It will not stand a serious examination.

Probability can indeed be always *represented* by a fictitious series. "It is two to one he is guilty" may be rendered by saying, "Two times out of three a verdict on such evidence as this would be right." Even when the possibility is unique, we yet can abstract from that quality and say, "Men such as I am would die before forty two times out of three. Nay, even when we leave events altogether behind us, we still can keep up this mode of expression by a fictitious series. Imaginary judgments here become the events. "It is even chances the soul is a bodily function" may be translated by "In making such judgments as this a man would be wrong through one half of the series and right through the other half."

But is such a way of putting our meaning the real and essential idea we entertain? When we wish to be correct, are we forced so to speak? It always is possible, but is it always necessary? Is it always even natural? And then there remains a question in reserve, Is it not incorrect?

§ 49. Let us begin with its possibility. Why can we always express the chances by making use of a fictitious series? For this reason. When the grounds from which we reckon are considered as causes, we are accustomed to suppose that their issue in a series of phenomena will exhibit the same numerical proportions that our fractions possess. If so, then on one side the causes (or cause) of the series and, on the other side, the series itself will answer to each other. We say what we have to say of the cause, indifferently, either by stating its effects, or by setting out the reasons it gives us to expect one effect and not another. This is natural enough where the fictitious series is imagined to be real. It is not so natural with unique events, where the series strikes us as specially manufactured to express the chance. It is still less natural where the possibility itself is not an event, and the series is nothing but the series of judgments. But even here

it still is possible. Since psychologically the grounds are causes (p. 494), since, in other words, the logical reasons which necessitate the result are what produces the fact of the judgment, I can imagine, if I please, a series of judgments, and say, Since these numerically answer to the reasons I have, therefore such a numerical part will be true. The expression by a series is here quite unnatural, but it still is possible.

§ 50. The issuing of a certain series is only one way of putting probability. It is sometimes a natural way; it is sometimes a not unnatural way; it is sometimes most unnatural. But it is never the right way; it is never more than a manner of statement; it is never the real meaning and intent. Even when I start from an actual series, I must leave it before I can get to probability. I must go to its cause by what is called a method of reduction, by an inductive hypothesis. And I can not simply define this cause as that which either has issued, or will issue, in a certain series. I can not do the first, for that would be certainty and not probability. And I can not do the second without an assumption which I am unable to justify.

It is obvious, in the first place, that to take a series, and to say "The cause which has produced this series—has produced this series" is merely frivolous. On the other hand, if I add "will produce this very same series on *other* occasions," that is not frivolous, but is either irrelevant or else unjustifiable. If it means "In another case where the conditions are not disparate, the same cause will be followed by the same effect," that assertion is true but is quite irrelevant, because merely hypothetical. For in an actual fresh case I do not know the fresh conditions, and, if I did, I do not know what the old cause specially is. I do not know the actual cause (or causes) of the former series. I do not know that these are present again in the unknown case. I do not know what conditions the fresh case brings; and, if I did, I might be unable to deduce the result from the complication of elements. In short I can not go from a given series to an unknown series or an unknown case. To reason directly is of course impossible, and I can not reason indirectly through the cause, because I do not know the actual cause in one case or the other. Its general character, to a

certain limit, I do know in one case, and assume in the other, but this general character does not imply a series, and the individual cause itself I do not know and so can not use.

The upshot of this is that within probability you really have not got the effects on one side and the cause on the other. If then you give as the essence of probability the production of a series with certain marks, you go beyond what your *data* will warrant. For your actual series has now ceased to be taken as a series of events produced in time. It has degenerated into a set of conflicting reasons, possibilities as to an event of a certain sort, which in default of detailed information I use in order to determine my judgment. My probabilities do not represent a series as such. I now have nothing whatever but conflicting grounds for belief and expectation, grounds for belief as to any fresh case or number of cases that have the *general character* of my series. And these fractional reasons, which are all I can work with, are the same in any one new instance as in any number of new instances. Thus the supposed *differentia* of an imagined series, in the first place, would add nothing to the probability which already exists apart from the idea of any series. But, in the second place, if it does add, and if it goes on to say that the series *must* have a character answering to the expectation, then it adds what is *false.*

§ 51. And with this we come to an obstinate illusion. There is a common idea that, if you know the chances of any set of events, you really know the character of the actual events which are to take place. It is supposed that the series will correspond to the fractions. For instance, if we take the case of a die, the chance of any one face is $\frac{1}{6}$, and from this we argue, "In a series of throws each face will be seen in one-sixth of the run." But we have no right to any such assertion. Not knowing the cause, knowing only a part while part is hidden, we can say no more than that our information leads us to expect a certain result. It is monstrous to argue that therefore that certain result *must* happen. It is false reasoning *a priori,* and *a posteriori* the facts confute it. It is not found in experiment that actual runs do always, or often, correspond *exactly* to the fractions of the chances. That

correspondence is after all the most probable event, but to make it more is a fundamental error.

§ 52. I shall return to the truth contained in this error, but at present we must try to get rid, if we can, of the error itself. We may expect an objection. "Experiment," it will be said, "does not disprove the assertion that is made. That assertion is not that in a *finite* series the numbers will come right. They will come right only if we go on long enough, and in the long run." But what is this "long run"? It is an ambiguity or else a fiction. Does it mean a finite time? Then the assertion is *false*. Does it mean a time which has no end, an infinite time? Then the assertion is *nonsense*. An infinite series is of course not possible. It is self-contradictory; it could not be real. And to say that something will certainly happen under impossible conditions, is far removed from asserting its reality. The affirmation that an event may be assumed to take place in an infinite series, and not outside it, would, in the mouth of any one who knew what he meant, be a suggestion that the event may not take place at all.

§ 53. I hope I need not protest that I am hardly so foolish as to attempt to offer an ignorant objection to the use of infinities and infinitesimals within the sphere of mathematics. I would rather say nothing at all on this matter than appear as presuming to doubt the validity of processes employed by the greatest men in the exactest of sciences. But I shall not so be misunderstood. An objection to the use within certain sciences of certain ideas must be taken within the limits of those sciences. But the use of these ideas outside their science carries with it no authority, and, so long as the general meaning is understood, may be criticized by men who are ignorant of the science in which the ideas give brilliant results. It is so with infinity. Outside mathematics an infinite number is an idea that attempts to solder elements which are absolutely discrepant. It could not exist until the world, as known in our experience, was utterly shattered and transmuted from the roots. I could not find an illustration I would sooner use to express impossibility. And it is this idea which, outside mathematics, is presented to us in the error we are combating. Mr. Venn, for whose powers I feel great respect,

and from whose *Logic of Chance* we all can learn, holds that in the long run every chance will be realized. This "long run," he tells us, is an infinite series (p. 146), and (unless I very much misunderstand him) he goes on to call it a "physical fact" (p. 163). His book is much injured by this terrible piece of bad metaphysics. He has translated a mathematical idea into a world where it becomes an absurdity.

§ 54. We must everywhere protest against the introduction of such fictions into logic, and protest especially where the ideas are not offered in the shape of fictions. The formula of the "long run" must be banished from logic, and must carry with it a kindred illusion in the imbecile phrase, "if you go on long enough." "The event," we are told, "will answer to the chances." But it does not answer. "Oh it will, if you only will go on long enough. You toss a coin and, the chances being equal, if you only go on long enough, the number of heads and tails will be the same." But this is ridiculous. If I toss the coin until the numbers are equal, of course they will be equal. If I toss it once more then, by the hypothesis, they become *unequal.* I might just as well say, "If I only go on long enough the events will certainly *not* answer to the chances." Your formula is false or else tautologous. If it means "Suppose the numbers are equal, and suppose I then stop, the numbers will be equal," that is surely tautologous. But if it means the numbers will turn out equal in an infinite series, then that is false, for such a series is impossible.*

§ 55. But let us turn from the error and see the truth which lies hid beneath it. It is false that the chances must be realized in a series. It is however true that they most probably will be, and true again that this probability is increased, the greater the length we give to our series. What reason have we for holding these two beliefs? (i) Why do we think that the series will probably answer to the fractions? (ii) Why do we think that in a longer series the correspondence is more likely?

* Cf. Lotze, *Logik*, 437. I may remark that if the formula meant, "The series is sure to cross and re-cross the point of equality," then, in the first place it would be *false*, since there is no *certainty;* and, in the second place, such an oscillation is not *equality*.

(i) Probability, we have seen, is not essentially concerned with any series. It is based upon grounds which, even if we consider them as real, may not be causal in the sense of productive of events in time. They may be *causæ cognoscendi* and not *essendi*. It is when our grounds are grounds for belief as to the nature of an agency, which is to produce events in time, that we are able to consider them as causal elements. And this is the case we have to suppose.

We know that a series is to be thrown with a single die. Let us first take one throw. That will have a cause, and the cause is only partially known. We know that it is complex and consists of many elements. Of these elements, so far as they are distinctly known, five parts are hostile to any single face and but one part favourable. The unknown residue, so far as it determines the case, is quite unknown; and, though it is not indifferent and though it can not be so, yet within our knowledge we must take it as indifferent. In the cause of the single throw there are therefore, beside the unknown factors, one sixth part of the agencies favourable to each face.

Now take the whole series. That series, before I throw it, is as certain and fixed as though I had thrown it already. But here again I do not know the causes. About one part I know nothing in detail, and so I must take it as being indifferent, although I am sure it is not so in reality. Of the rest of the agencies, which I suppose, one sixth is favourable to each face, and five sixths hostile. What conclusion can I draw as to the nature of the series? Will one agency produce that result which we suppose it would produce, did the others not intervene? Will in each case of the series the supposed majority of agents prevail? We have no means of knowing. The series, absolutely fixed, is fixed by what we do not comprehend. We must take the possibilities, and the possibility for which there is most ground is the likeliest. There is less ground to think that in a series of six throws one face will be absent, and one twice present, than that all should show once. In the latter case we do but make ignorance a ground for complete indifference. In the former case we give a preference without any kind of warrant. It is not that each face has any sort of *claim* to come uppermost

once. It is that no face has more claim than another to show itself twice. This is why we think the most likely series, or the least unlikely, will be that which corresponds to our fractions.

§ 56. (ii) But why, it may be asked, does the length of the series increase this probability? Does the greater length add any new ground to those we have for believing in the correspondence of the events with the chances? No, it does not add any. Does it decrease any ground we had before for thinking the opposite? Yes, it does do that; and it does it, I think, in the following way. The unknown residuum in the cause of each throw was assumed to be indifferent. But it was not at all assumed to be passive. It supplies the determining element in the cause. It decides for one face, though we do not know for which face it decides. Now how does it decide? Does it act quite regularly and in strict rotation, or is it irregular? That we do not know; but, taking the possibilities, we believe that those in favour of irregularity are more than those in favour of rotation. It is therefore most probable that our series will turn out to be irregular. But, since we know no reason to prefer any one face, we can not say that any proportion other than strict equality is the most probable. How are these assertions to be reconciled? Very easily in this way. Owing to the assumed *indifference* of the causal residue the faces will probably appear in their right numbers; but, because of its *irregularity*, their appearance will probably be irregular, and irregular to an extent to which we can assign no limit. To combine these attributes it is necessary to suppose that the whole series will be most probably regular, but will contain periodic irregularities. The greater the irregularity becomes, the less grows the chance of a final regularity, unless the series is proportionately lengthened. Therefore, since we can fix no limit to the irregular sequence of the faces, we conclude that, the longer the series becomes, the greater becomes the probability of a regular result. And this is a rational, and necessary conclusion from our imperfect *data*.

§ 57. It is true that, if you make a series longer, you decrease the chance of irregularity. It is true that, if *per impossibile* the series were so long that, in comparison with

its length, every possible abnormal run was a period which other periods might easily balance in the completed cycle—if, I say, *per impossibile* this phantom could be real—it is true that the above chance of irregularity would vanish. If we assume that what we do know gives us reason to believe in a series correspondent to our fractions; if we next assume, by virtue of a fiction, that the unknown residue gives no reason to believe in an unbalanced irregularity, then *on these assumptions* we may go to a conclusion, and we have no ground to disbelieve the statement that the series will exhibit the relations of the chances. But the first assumption is based on ignorance, and the second is based on a known impossibility. If we mean to speak about a series of events that could ever happen, we can say but this. It is certain there will be a series, each throw of which will give a single face. It is possible that in a series of *any* length but one single face should appear throughout. No arrangement is impossible. It is most probable that the events will answer to the fractions, but against that probability there still remains another consideration, the chance arising from the possible irregularity of one part of the causal elements. This fraction is diminished by each increase of the series, but it does not disappear and *it can not disappear*.

§ 58. We do *not* know that in the long run the events will correspond to the probabilities. We do *not* know that, if we go on long enough, every chance will be realized. It is mere superstition which leads us to believe in the reality of the fiction which gives birth to these chimæras. When I see the demonstrations, offered to gamblers against a bank, which prove to them that in the long run they can not but lose, I say to myself, On which side do I see the darker illusion? And I answer, On both sides the illusion is *the same*. For what is the root of the gambler's "system"? Is it not his belief that independent events are affected by each other? But this belief is a strict deduction from the premises offered him. If he really *must* lose, if there really is a cycle in which the chances *must* all be realized, then, let him observe the beginning of the cycle, and mark the irregularities, and he surely *must* win. Since to equalize the numbers the end of the cycle must balance the beginning, he can speculate on that

balance and his "system" is right. "Oh, but it is wrong, for the series is not finite. It is only after an infinite duration of play that the balance is struck. It is absurd to say he can be sure of winning." But is it not then equally absurd to say that he is sure to lose? If you mean he must have lost by the end of his life, you have just admitted your assertion to be false. If you mean *he* must have lost when he has got to the end of infinite time, confess that your meaning is something like nonsense, and that the gambler is right in imagining that you, as a rational man, must mean something else. The truth is that your common assumption is false. There is no *must* about it. The chances consist of grounds for belief in the nature of a series no event of which is known. And all they tell us is this: that we have more reason to expect one thing than we have to expect another, and that the increased length of the series proportionately decreases a reason for doubt, which never quite vanishes.

§ 59. I must not be suspected of a desire to intrude into mathematics if, in this connection, I venture to remark on a well-known paradox. I am to toss a coin, and to go on tossing so long as I throw heads and nothing but heads. I am to receive £2 if I throw head once; if I throw head twice I am to win £4; for three successive heads I get £8, and so on accordingly. The series is supposed to have no limit except the appearance of a tail. And the question arises, how much am I to pay for the privilege of one single trial? The answer given is, An infinite sum; for it is possible I may throw an infinite series of nothing but heads (vid. De Morgan, *Probabilities*, p. 99). The reasoning on which this conclusion seems to rest is exceedingly simple, and I need hardly say that I do not doubt its perfect validity within mathematics. And I think I see that no *other* answer can possibly be given. Unless an arbitrary limit is fixed, I may be allowed to say in all humility that I think I understand that, if this possibility has any value at all, then the worth of my chance is either incalculable or else is infinite. If this answer is given me by a special science, I dutifully receive it as true—within that science.

But if I am told that in actual fact the result is true, I

must be allowed to protest. I must be permitted to remark that the reasoning is absurd and the result is nonsense. I do not mean merely that it is absurd if we take it as a *practical* precept, because a man can not live for ever, and all the money in the world is finite. I mean that it is a *theoretical* absurdity. It is not true ideally any more than really. Since an infinite sum is an impossibility, the infinite series can not possibly be thrown. There is no chance whatever. There is no fraction at all. It is nothing I could win. It is nothing I can expect. It is nothing for which I can reasonably pay. The result is a deduction from premises known to be false and impossible.

It is idle to answer that the problem is "stated in the ideal form" (Venn, *ibid.* p. 137). There is a difference surely between ideals which as such do not exist, because they are abstractions, and ideals which are downright self-contradictions. It is one thing to say, "There is a connection between abstract elements, so that when one of these is found as a real quality we shall have the other," and another thing to continue this assertion, when we know that the first of these elements is self-contradictory and could not possibly be any quality of reality. In this latter case what is true of fact can not be the consequence of an impossibility, but only the basis of the hypothetical judgment. Neither antecedent nor consequent is taken as real or even as possible. But in a common abstract judgment the antecedent is taken as at least a possible quality of the world. Mr. Venn perhaps would question this difference between an abstraction and an impossibility, and would perhaps assert that an infinite series is really possible. In any case I must be allowed to protest against the invasion of logical reason by mathematical fictions. If an infinite series is thought possible, we should be told how it can be possible. If it is not thought possible, it should not be offered us as if it were.

§ 60. There are other points in the theory of chances which have logical interest, but we have no space to discuss them here. We have said enough to make clear the relation in which that theory stands to our general principles. We have to avoid the fiction of the infinite long run, and the

vicious alternative of "objective" and "subjective," and the false assumption that the essence of chance involves a series of events in time. If we keep clear of these pitfalls, the truth is by no means difficult to reach, and we hope above to have stated it clearly in its general form.*

§ 61. There is an aspect of modality we have neglected to notice. The omission was intentional, and the mention of this aspect has been reserved for the present place. There is an old doctrine which connects universality with necessity, and that doctrine is true. The necessary we saw was the ideal consequent, and such a consequent can not come except from an ideal antecedent. You never can say "B follows from A," "is because of A," "must be, given A," unless A is present in a determinate form. A must be a content without any mixture of mere sensuous conditions. It must be ideal, abstract, and so universal. If the ancient doctrine on its logical side may suffer some loss, since necessity becomes for logic hypothetical, yet it stands all the firmer. The "because" can not couple anything but universals.

§ 62. We may notice an error which creeps in with this truth. The antecedent in necessity must be universal, but it need not be *more* universal than the consequent. Where we say "because" we do not always appeal to anything more abstractly general than that which follows from our reason. "A must be equal to B, because C is equal to both B and A," "A must be removed by one foot from C, since B, which touches both in a certain manner, is one foot long." The consequence is not less general than the antecedent, and we deceive ourselves in thinking it always must be so.

No doubt in the cases where you say "because" you may find what we call the principle of the sequence, and that of course must be more abstract than the actual consequent. But the principle is not the antecedent itself. It is the base of the general connection, not the sufficient reason of the particular consequent. There is no more need for the

* The books from which on this subject I have learnt most are Lotze, *Logik;* Sigwart, *Logik;* Wundt, *Logik;* Jevons, *Principles of Science;* Venn, *Logic of Chance;* De Morgan, *Probabilities.*

consequent to be more concrete than the antecedent, than there is for the effect to be more special than the cause. These ideas are nothing but kindred illusions (Book III. Chap. II.).

§ 63. We shall have to return hereafter to this point, but have been right to anticipate here the conclusion. We have indeed begun some time back to anticipate the conclusions we have to reach in the following Books, since already unaware we have entered their territory. Silently before in the second Chapter, and now almost explicitly we have made the transition from judgment to inference. In both the latter kinds of modality we reason openly. The possible is that which we argue would follow from certain premises, part of which are taken as true. The necessary is that which we infer must follow, if its grounds are premised. It was in this sense that possibility was one kind of necessity. In both alike we deal with conclusions, reasoned results from given *data*. In logic we find that a necessary truth is really an inference, and an inference is nothing but a necessary truth. This is the secret which we hardly have kept, and with the discovery of which we may pass at once to our Second Book.

BOOK II.

INFERENCE.

AT the end of our First Book we made a transition to the subject of our Second. Modality took us from judgment to reasoning. An inference is either a result or a process. If we take it as a result, we saw that it is the apprehension of a necessary truth. If we take it as a process, it is simply the operation which leads to that result. A truth judged true because of something else, and the going to a truth from the ground of a judgment or supposition are what we mean by conclusion and reasoning. And this starting-place being reached, our right course may seem plain. We should first make quite clear the general character of inference, and should exemplify this by the necessary detail. And then we might proceed at our ease to remove the erroneous doctrines which cumber the ground.

There is an objection to this way of dealing with the subject. The reader would find his difficulties increased. I do not indeed know, after my first Book, if at this stage I have any actual reader; but I am sure, if I have one, that he is not eager to make a great effort. We have perhaps nothing in front of us so hard to cross as what we have passed over, and yet we shall find there are obstacles enough. It is better to make a gradual advance. Instead of going at once from the facts to the truth, and from that to the removal of erroneous theories, I shall aim at reaching an easy vantage-ground, from which we may disperse the mass of mistakes which bar our progress and harass each movement. This will be the object we shall try to gain first. Secure in our rear, we may then proceed upon the final position.

We must therefore in the first of the two following Books be content with a truth which is only partial. We must assume that in every valid inference no less than three terms are given to the reasoner. We shall hereafter see that this assumption is not tenable, but it will serve as a basis from which to operate. It may be a high thing to have no order of convenience, to follow the developement of the subject matter, and to let the reader follow if he can. But it is an end more possible, and perhaps not much lower, to help the reader by any means whatever to a better understanding.

The arrangement of this Book as well as its basis must be considered arbitrary. I shall begin by setting down some characteristics of inference which perhaps are likely to be accepted by all. And to these I shall add a few examples of actual reasoning. I shall then proceed to deal with some mistakes, confining myself in the main to the syllogism. In the next place I will point out that inference consists in an ideal construction. And fourthly I will state some principles of synthesis by which we operate to effect that construction. One essential factor in valid inference will then be indicated, and will be seen to rest on a serious assumption: and we shall further show that in every inference at least one premise must be universal. Having reached this point we shall conclude our First Part, and take a fresh departure; and throughout the rest of this Second Book we shall be engaged in the work of clearing the ground. We shall have to criticize in general the alleged Association of Ideas, and especially the Association of Similars. We shall briefly dispose of the supposed way of arguing from particulars to particulars; and shall show by an examination of J. S. Mill's Canons that his Inductive Logic is theoretically invalid. After this, having declined to enter on a discussion of Mr. Spencer's doctrine, we shall end with a review of Professor Jevons' theory of Equational Logic. The position we shall have reached, and the negative results we shall have been forced to gain, will have served to prepare us for a completer view.

PART I.

THE GENERAL NATURE OF INFERENCE.

CHAPTER I.

SOME CHARACTERISTICS OF REASONING.

§ 1. When we first consider the subject of reasoning we seem to have nothing but a conflict of opinion. But a second glance reveals some agreement. There are three characteristic features of inference as to which in our hearts we are really at one. I do not mean that we should not deny them if our theories required it, but we should do so unwillingly and with a sense of compulsion. The first of these is a negative mark. There is a difference between reasoning and mere observation; if a truth is inferred it is not simply seen, and a conclusion is never a mere perception. The latter may seem to be given to us bodily, but the former involves some other element. It may indeed be thrust upon us, we may be compelled and constrained to make it, but we can not passively take it in. The fancies we cherish in respect of perception desert us as soon as we come to inference. The external fact or the reflection it throws off can violently break into and enter our minds, or the reality can stamp our yielding substance with its image and superscription. But we can hardly apply these ideas to a conclusion, for we feel that in this there is something that repels them. An inference can not wholly come in from without or be passively received. It is not mere vision, it is more than observation.

§ 2. There is another mark which a conclusion possesses. It is not a mere fragment or isolated unit; it does not exist in and by itself, but is the result of a process. It rests upon a basis, and that basis is something we already

know.* In inference we advance from truth possessed to a further truth; and the conclusion would never be reached at all if it were not for knowledge already attained. It is therefore dependent and in a sense adjectival.

§ 3. But there is another attribute which a conclusion has got. It must convey some piece of information, and must tell us something else than the truths it depends upon. We have no inference at all, we have simply a frivolous show and pretence, if taking something we already know we assert the whole or part of this once more, and then say, "I have reasoned and got to a conclusion." An inference must be more than a vain repetition, and its result is no echo of senseless iteration. It is not mere observation yet it gives us something new. Though not self-existent it is more than a shadow. To those who delight in discrepant metaphors we may bring conviction when we so express ourselves: The truth which is seen in the mirror of inference has not wandered in through the window-pane of sense, nor yet is it merely a reflection cast by an article of furniture already in the mind.

§ 4. Except in the interest of a preconceived theory, I think that these statements, at least so far, will not be denied. But I can hardly hope that the examples of reasoning I am about to produce will all escape unchallenged. Yet I shall not defend them, for I do not know how. They are palpable inferences, and the fact that they are so is much stronger than any theory of logic.

(i) A is to the right of B, B is to the right of C, therefore A is to the right of C. (ii) A is due north of B, B due west of C, therefore A is north-west of C. (iii) A is equal to (greater or less than) B, B is equal to (greater or less than) C, therefore &c. (iv) A is in tune with B, and B with C, therefore A with C. (v) A is prior to (after, simultaneous with) B, B to C, therefore A to C. (vi) Heat lengthens the pendulum, what lengthens the pendulum, makes it go slower, therefore heat makes it go slower. (vii) Charles I. was a king; he was beheaded, and so a king may be beheaded. (viii) Man is mortal, John is man, therefore John is mortal. We shall go from these facts to ask how far certain theories square with them.

* For the sake of clearness I here ignore the hypothetical character of inference.

CHAPTER II.

SOME ERRONEOUS VIEWS.

§ 1. The task before us in the present chapter is the removal of certain mistaken ideas. And the first to go must be the major premise. We saw, at the end of the foregoing Book, that the necessary truth need be no more particular than the truth it depends on, and that logical necessity does not always come from the application of universals to something *less* universal. But if so, there need not be always a major; and the examples we have given put this beyond doubt.

In (viii) our old friend is still to be found, but in (vi) and in (vii) you will hardly be able to distinguish him from the minor, and in all the rest he has totally vanished. You may say that in (iii) we really argue from "Things equal to the same are equal to each other," and I do not doubt you will find believers. But if such reasoning is reasoning *from* an axiom, how did people reason before axioms were invented? And if without axioms it is impossible to infer, I wonder where all the axioms can have come from (cf. Book III. Part II. Chap. I.). But if we take an example like number (i), will any one show me the major there? "A body is to the right of that which that, which it is to the right of, is to the right of." I know this major, because I have just manufactured it; but you who believe in major premises and who scores of times must have made the inference, confess that you never saw this premise before.

We must either admit that a major is not necessary, or else we must say that my examples are not inferences because they have no major. In either case an effete superstition will be doomed.

Begotten by an old metaphysical blunder, nourished by a senseless choice of examples, fostered by the stupid conservatism of logicians, and protected by the impotence of younger rivals, this chimæra has had a good deal more than its day. Really dead long since I can hardly believe that it stands out for more than decent burial. And decent burial has not yet been offered it. Its ghost may lie quiet when it sees that the truth, which lent it life, can flourish alone (cf. Book III.).

§ 2. The major premise, we have seen, is a delusion, and this augurs ill we may think for the syllogism. Our suspicion is well founded, for the syllogism itself, like the major premise, is a mere superstition. It is possible no doubt, as in our seventh example, to have a syllogism which has either no major premise, or at all events no minor. And it is unquestionably true that in many arguments a major premise is actually used. Nor will I deny that some three fourths of our valid arguments can be got within the forms of *Barbara Celarent*. But yet after all the syllogism is a chimæra, for it professes to be the model of reasoning, and there are reasonings which can not by any fair means be conformed to its pattern. In whatever sense you interpret it, it turns out insufficient; and in certain cases it will turn out worse. Let us examine the principles of reasoning it lays down.

§ 3. If we take first the axiom of inclusion in extension as it finds expression in the maxim *De omni* &c., we are forced to say that this principle is unsound. It sins against the third characteristic of inference (Chap I. § 3), for it does not really give us any new information. And, as has been long ago remarked, it embodies a *petitio;* for if, asserting the premise "All men are mortal," I understand by the subject each single man, then I either am aware that John is mortal, or if not my major must be withdrawn. The major premise has asserted something of each member of a collection, and the minor and conclusion do but feebly re-echo one part of this statement. But that is no inference.

We might try to understand the assertion differently. We might say that what "All men" really means is the collection or class and not each one member. But, if so, we fall blindly

into a second pitfall. John's personality perhaps has no unity, but he can hardly be called a collection of *men*, and our syllogism now fails through *quaternio terminorum*. It perhaps fails too through falsity of the major.

The *dictum de omni* thus turns out vicious. But if it were sound it would not be sufficient, for it does not cover all valid reasonings.

§ 4. There is another mode of interpreting the major. "All men are mortal" may be said to assert the identity of the subjects in "men" and "some mortals;" and "John is man and therefore mortal" assures us that the subject, which we distinguish as John, is identical with a member of the class of men and also of mortals. But we know already how this is to be read. The identity of the subject is another way of affirming the conjunction of diverse attributes. The fact we have got is either the co-existence in one single subject of the attribute mortal with the rest of John's attributes, or else the possession by a single thing of the several names "John," "man," and "mortal" (cf. Book I. Chaps. I. and VI.). And interpreted in this way, though the inference is valid, it will not fall under the *dictum de omni*.

§ 5. We may illustrate the above from complete induction. I may show that all planets move in an ellipse by counting and observing each single planet. But in what sense am I then said to perform an inference? I say "*therefore* all planets move in an ellipse," but I know already that every single planet does so move. If there were any planet which I could not so qualify I could not go on to *therefore* all planets. Does the "therefore" simply reiterate the "because," then there is clearly no inference. Does the conclusion assert that the collection, or class, itself moves through space in an elliptical manner? If this were true the premises would not prove it. But perhaps it means that, if anything is a known planet, it must have a course which will be found elliptical. We are free to forget that the individuals we know do move in ellipses. We have firmly established a connection of attributes, so that hereafter, given any single individual which we barely perceive to be a known planet, we can go at once from the base of that attribute to elliptical movement. But

the conclusion here does not rest on enumeration complete or otherwise; it proceeds from and rests upon a distinguished connection of attributes (Book I. Chap. VI. and Bk. II. II. Chap. III. § 3).

We may sum up the matter thus. If you say "Each individual has a certain attribute and *therefore* each has it," that is absurd. If you say "therefore the collection has it," that is invalid. If you say "Anything belonging to the collection has it and therefore this has it," then that is valid, but the "anything belonging" stands for an attribute. Complete induction shares the fortunes of the syllogism.

§ 6. The principle of inclusion within class extension is not merely insufficient, but unless we interpret it as a connection of attributes it is intrinsically vicious. Let us see if we can find any other view which will come to the rescue and will save the syllogism. "What stands," says Kant, "under the condition of a rule stands under the rule." It is thus he interprets "*nota notæ est nota rei ipsius.*" If you have an universal connection of two attributes, then, given one in a subject, you must also have the other.

It is evident that this principle of reasoning is valid, but it will not cover the whole of the ground; for, confined to the category of subject and attribute, it fails wherever you pass beyond. The subject no doubt is in some way qualified by whatever can be asserted about any of its attributes, but it is idle to expect a result from this where we are not concerned with subject and attributes. "A is prior to B and B to C, and therefore A is prior to C," but what here am I to call the "condition of the rule" or the "*nota*" or "attribute"? I can not take B as the attribute of A, and if I look for that attribute in "prior to B," I fall at once into *quaternio terminorum*, since the second premise has got B simply.

And even when we keep to subjects and qualities, there are inferences which the principle will not justify. The syllogistic third figure can hardly be supposed to exemplify the axiom which Kant has adopted. Not only is the category of subject and attribute (as commonly applied) unable to cover the whole field of reasoning, but within that category it is a further mistake to insist on the necessity of a major premise.

§ 7. It is evident that the syllogism can not be saved or can only be saved in such a way as to be syllogism no longer. The one chance there is of preserving the syllogism is for us to take our stand upon the third figure. "The attributes of one subject are interrelated" will then become the axiom of inference. We have seen (§ 4) that all syllogisms in extension can be interpreted according to this axiom, since the identity of the subject was the other side of that relation of attributes which we wished to assert. And it is evident again that all relations of attributes can be regarded as based in a subject. We shall see hereafter (Part II. Chap. IV.) that Substitution of Similars can be taken as syllogism within the third figure; and I will go yet further. There is and there can be no inference whatever which may not be reduced under the head of the axiom, since everything which in any way is conjoined can be taken as related within some subject (Book III. Chap. VI. §§ 33, 34).

We may see hereafter how this reduction is effected. For our present purpose it is enough to remark that in many cases it can not be performed without processes which would horrify the conservative logician, and which gain no end worth the violence they use. Unless "subject and attribute" are used in a way which is quite unknown to the traditional logic, the axiom fails of universal validity, for it does not apply to any of those relations which two or more subjects bear to each other. "Two pianos are in tune with one fork and therefore the one is in tune with the other." But in this instance, unless the terms are manipulated freely, you will not show one subject with its attributes.

§ 8. It is obvious, if we fairly consider the examples which have been adduced at the end of Chapter I., that the syllogism, if it keep its traditional form, is in great part impotent. And I confess I do not know what policy will seem good to the friends of the syllogism. They may boldly accept the violent alternative of excluding all examples which they can not deal with. But I think we may say that such a course as this would be nothing short of a confession of bankruptcy. If a savage may know the road that will take him from A to B, and the road that will take him from B to C, and yet may not know, and may

be unable to find out, the way he should go from A to C (cf. Spencer, *Sociology*, I. 91), I do not see how it can be denied that he is ignorant because he is incapable of an operation. And if that operation is *not* an inference, I can not see why anything else should *be* inference. The plain and palpable facts of the case will, I think, be too hard for the friends of the syllogism. And if they embrace another alternative, and find their amusement in the manufacture of majors, which would never have been seen if the arguments had not come first, then I think once more that the end must be near. So barren a shift will be the dying effort of a hard-run and well-nigh spent chimæra.

But there is, as we saw, another alternative; it may perhaps be thought possible to save the syllogism by first reforming it. Throw the major premise overboard, and call anything a syllogism which can be brought into the form of elements related within one whole. But if the friends of the syllogism resolve on this policy, I think they are friends it might pray to be saved from. It is better to bury a delusion and forget it than to insult its memory by retaining the name when the thing has perished. And it is better to profess that delusion openly than ostensibly to abandon all but the name, and then covertly to re-instate the errors it once stood for. When a mistake has lasted some two thousand years I am ready to believe that it must contain truth, but I must believe too that the time is come when that truth should be able to stand by itself. We can not for ever with eyes fast closed swallow down the mass of orthodox rubbish in which that truth has wrapped itself up And if the time has not come for extracting the kernel, the time has come for rejecting the shell.

§ 9. But if the principle of the syllogism is not the axiom of reasoning, can we find any other which will stand the test? We shall see hereafter that the logic of "Induction" is no more satisfactory. We shall allude to the doctrine of Mr. Spencer, and review the theory of Substitution which has found an advocate in Professor Jevons. For the present it will suffice to mention a principle adduced by Mr. Spencer, and which has succeeded in gaining the authority of Wundt. "Things related to the same are related to each other" is

the axiom, we are told, of all valid reasoning. "Where judgments are placed in relation to one another by means of conceptions they possess in common, the other conceptions, which the judgments possess but do not possess in common, must stand themselves too in relation to one another, and that relation is expressed in a new judgment."—(Wundt, *Logik*, I. 282.)

We may confine ourselves to the simpler formula. "Related to the same are related to each other" is wide enough to cover the examples we have given. We shall certainly hereafter have occasion to question if it is wide enough to cover all possible examples (Book III. Part I. Chap. I.). But though I may object to it hereafter as being too narrow, I must object to it here because it is too wide. It is a principle of falsehood as well as of truth; "A runs faster than B and B keeps a dog (C)," "A is heavier than B and B precedes C," "A is worth more than B and B is on the table (C)," or "A is like B and B is like C." You may doubtless extract some kind of inference out of these premises, but you can hardly go from them to any definite and immediate relation between A and C.

§ 10. It is true no doubt that, if A and C are both related to a common term B, we know that some relation must exist between them, since both must be elements in one world of knowledge. But unfortunately we knew thus much before, and independent of the relation of both in particular to B.

And again in defence of the axiom it may be said, In "A is like B and B is like C" the terms are *not* related to a common third term. B resembles A perhaps in one point and resembles C in another different one, and so it is with the other examples. It is not in so far as B keeps a dog that A outstrips him, it is not the B which has a place in time which is heavier than A, B is on the table in one capacity and is worth more than A in an other and different one. Thus the terms related are not related to the *same*, and, if they were, they would be related to each other.

The defence I have invented points towards the truth, and yet it is vitiated by a fatal mistake. It is true to say that in every relation there must always be an underlying identity; that relations, such as those of space and time, presuppose a

common character in the things they conjoin. And it is therefore true that, if a third term B stands first in spatial relation with A and again in temporal relation with B, its character in those two relations is different. Hence, if two relations are of different classes, the term common to each will so far not be the same.

But this line of argument, if we follow it out, will make an end of all kinds of relation (*cf.* Chap. VI. § 6). To say that when A is related to B, it is related so far as B is nought else but its relation to A, is quite suicidal. And, if we will not say that, and if already B is something different from its relation to A, on what ground can we refuse it a right to another relation with C, when at all events it has one point in which it differs from A? Let us try to see clearly; the terms of a relation must always be more than the relation between them, and, if it were not so, the relation would vanish. "A is equal to B," but if B were mere quantitative identity with A, we should have no equality; there would be nothing but A. "A is the same as B or different in quality," but if A and B were not both different and the same, then the terms and the relation would all disappear together. "A is north of B or prior to C;" but if A, B, and C were no *more* than mere naked positions in space or time, they would not be even that, and their relations would sink to utter nothingness. There always must enter into the relation something more than the actual relation itself. And this being admitted, if you deny that the B, which for instance is spatially related to C, is the same as the B which has a relation in time with A, you must be taken to assert that in the relation A–B the character of B is perfectly simple, and that B is nothing but that which constitutes its relation in time. But, if so, it is nothing which can be related, and the axiom can find no possible application.

The mistakes, which arise from a too wide axiom, may indicate the truth that related to the same are *not* related to each other unless they are related *under certain conditions.* We shall return to this point in Chapter IV., and the following Chapter will endeavour to convey some general idea of the nature of inference.

CHAPTER III.

A GENERAL IDEA OF INFERENCE.

§ 1. Every inference combines two elements; it is in the first place a process, and in the second place a result. The process is an operation of synthesis; it takes its *data* and by ideal construction combines them into a whole.* The result is the perception of a new relation within that unity. We start with certain relations of elements; by virtue of the sameness of two or more of these elements we unite their relations in one single construction, and in that we perceive a fresh relation of these elements. What is given to us is terms conjoined; we operate on these conjunctions and put them together into a whole; and the conclusion is the perception of two terms in relation, which were not related before the operation. Thus the process is a construction and the result an intuition, while the union of both is logical demonstration.

§ 2. Demonstration in logic is not totally different from demonstration elsewhere; proof is only *one* kind of demonstration. Logicians however seem generally not to be aware of this fact. When the mathematician "demonstrates" a conclusion the logician feels uneasy, though he can not deny that the conclusion is proved. But uneasiness becomes protest and open renunciation when he attends at the "demonstrations" of the anatomist. He shudders internally at the blasphemous assertion that "this which I hold in my hand" is "demonstrated." But his trials are not over; the illiterate lecturer on cookery overwhelms him by publicly announcing the "demonstration" of an omelette to the eyes of females.

* As we remarked before, the statements in this Book are subject to correction by the Book that follows.

But I think the logician has no real cause of quarrel even with the cook. For demonstration is merely pointing out or showing; and if the conclusion of an inference is seen and thus may be shown, so also may a nerve or again an omelette. It is useless to deny this, and the task of the logician is to distinguish inference from other kinds of demonstration.

§ 3. When in ordinary fact some result can be seen and is pointed out, perhaps no one would wish to call this "demonstration." It is mere perceiving or observation. It is called demonstration when, to see the result, it is necessary for us first to manipulate the facts; when you show within and by virtue of a *preparation* you are said to demonstrate. But if the preparation experiments outwardly, if it alters and arranges the external facts, then the demonstration is not an *inference*. It is inference where the preparation is *ideal*, where the rearrangement which displays the unknown fact is an operation in our heads. To see and, if it pleases us, also to show a new relation of elements in a logical construction is demonstration in the sense of reasoning.

§ 4. In what does this mental preparation consist? We have seen in our account of the synthetic judgment its general character. It demands in the first place certain *data;* it must have two or more connections of elements, as A – B B – C C – D; and these are the premises. It is necessary again that these premises should be judgments actual or suggested, and what they assert or suppose must consist in logical connections of content. For if the *data* consisted of unrefined sensuous material, or were mere imaginations, the result would be sensuous or merely imaginary; it would be a psychological effect and not a logical consequence. The premises are thus so far two or more judgments, and the operation on these *data* will consist in joining them into a whole. We must fasten them together, so that they cease to be several and are one construction, one individual whole. Thus instead of A – B B – C we must have A – B – C.

Now if this were done arbitrarily it would not be done logically, and we should have no reason to think the result true. If we took A – B and C – D and joined them togethe

as A – B – C – D, our procedure would be as futile as if in anatomy we showed connections by manufacturing them, or as if in order to clear a preparation, we employed some agent which radically changed it. In relation to fact our results in this case would be invalid.*

We can not logically join our premises into a whole unless they offer us points of connection. But if the terms between which the relations subsist are all of them different we are perfectly helpless, for we can not make an arch without a key-stone. Hence, if we are to construct, we must have an identity of the terminal points. Thus, in A – B B – C, B is the same and we connect A – B – C; in A – B – C and C – D, C is the same and we connect A – B – C – D. The operation consists in the extension and enlargement of one *datum* by others, by means of the identity of common links. And because these links of union were given us, therefore we assume that our construction is true; although we have made it yet it answers to facts.

Having thus turned our premises into one whole, we proceed to our conclusion by mere inspection.† If A – B – C – D is true of reality, then in that we can see A – C or A – D, or again B – D, relations which previously we did not know. Then, leaving out of view those parts of our construction in which we are not interested, we extract the conclusion we desire to assert. We first do a certain work on our *data;* and this work is the construction. We then by inspection discover and select a new relation, and this intuition is the conclusion.

§ 5. I will illustrate the above by several examples. Take three pictures on a wall A, B, and C; if I see them all at once as A – B – C there seems so far no inference, for my mere analytic judgment will give me A – C (Book I. Chap. II.). But suppose I see first A – B, and then afterwards B – C, no mere analysis will give me A – C. I must first put them together as A – B – C, and this is the construction of a synthetic judgment. I then perceive A – C, and this is the

* All this is subject to correction by Book III.

† I omit to consider here the selective action. That is not of the essence of all inference. Vid. Book III. Part I. Chap. I.

conclusion, which is inferred not because it is seen in fact but seen in my head.

Let us take an instance from geographical position. A is ten miles north of B, B is ten miles east of C, D is ten miles north of C; what is the relation of A to D? If I draw the figure on a piece of paper that relation is not inferred; but if I draw the lines in my head, in that case I reason. In either case we employ "demonstration," but only in the latter do we demonstrate logically.

"A=B and B=C therefore A=C." In this argument there is no demonstration to sense, for the showing is ideal. The terms are put together through the sameness of B, and are combined into a whole united by the relation of quantitative identity. The whole is a series united by that character, and here is the construction. We then inspecting the series find a new relation A – C, and here is the conclusion.

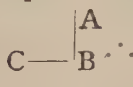
Take an example we have given in Chapter I.; if three strings A, B, and C are struck together and we hear that they all produce the same note, we hardly *infer* that they are in tune with one another. But first strike A and B, and then strike B and C; on this, if A and B have no difference in note, and B and C have no difference in note, I proceed to construct the ideal group of ABC united throughout by sameness of note. This is a mental synthesis, and a mere analytical perception then adds that A and C are in tune with one another.

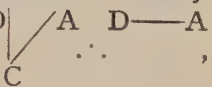
We may see this again in an ordinary syllogism. We must not state it so as to beg the question, or to have no common term, but may state it thus, "Man is mortal and Cæsar is man and therefore Cæsar is mortal." There is first a construction as Cæsar-man-mortal, and then by inspection we get Cæsar-mortal.

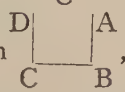
§ 6. It is useless to attempt to lay down rules for either part of this process. It is the man who perceives the points of union within his premises—who can put (as the saying is) two and two together—who is able to reason. And so long as he secures the unity of his construction he has reasoned rightly. In the next Chapter we shall see that no models for construction can possibly be invented. And for the

process of inspection one wants a good eye; for there are no rules which can tell you what to perceive.

We must free ourselves from these superstitions, if we can, and there are others beside which have oppressed us too long. It is ridiculous for instance to think about the order of our premises. The construction when made need have no order in time, and the order of its making may be left entirely to private convenience or else to chance.

And there is another superstition we may here dispose of. The number of terms is not limited to three. In the geographical example of the previous section we certainly do not argue thus 

, and 

, but we first complete our construction 

, and then go to D——A. It is true no doubt that in making a construction we are forced to establish one link at a time; but it is wholly false that we are compelled to conclude before we take in another premise. Logic sets no limit to the number of premises which may precede the conclusion, and it is the weakness of our heads which narrows our constructions and narrows them sometimes to the prejudice of our inference. There is no branch of science where constructive power is wholly uncalled for, and certainly some where it is of the first importance. And perhaps we may say without exaggeration that a man, who can not use more than three terms in reasoning, is unlikely to do much in any subject. But, however that may be, the limit is psychological and is not logical.

CHAPTER IV.

PRINCIPLES OF REASONING.

§ 1. We have seen in outline the main character of inference and we naturally recur to a former question, Is there any axiom or principle of reasoning? The result of our enquiry in the Second Chapter was that we could find nothing quite satisfactory. The syllogistic maxims were all too narrow, and the axiom that "Things which are related to the same are related to each other," we found on the other hand was much too wide. It may serve us however as a point of departure. When properly restricted it will express the truth, so far as is required by the present Book.

I will repeat the result we arrived at before. The principle that elements which stand in relation to a common point are themselves related, is not the actual principle that operates in any given special inference. In its abstract form it is useless for the purpose of getting a conclusion. It assures us, before any construction is made, that anything which we have as an element of knowledge stands in *some* relation with every other element. But it will not enable us to go beyond this, and by combining our premises to get a definite relation. If A is prior to B in time, and B is west of C in space, then on the strength of B we can put these together, but we can not by means of our combination get a definite relation of A to C. We knew long ago that A and C co-existed as members within the universe of knowledge, and we desire to learn now not that general connection, but some special attitude of A to C. But in order to get this, and to be able so to speak to draw a new line from A to C, it is necessary first to connect A and C in a special manner. They must be interrelated not generally and in the universe at large, but in some special

world. If one is merely in time and the other merely in space, they have so far not got any binding centre. To be specially related they must be related to the same, and under conditions which secure an unity of construction.

If what operates in inference is the principle of the individuality of synthesis, the axiom of that operation must not be taken too widely, and at the cost of clumsiness we must state it in two pieces. "Where elements A and C are related homogeneously to a common B, A and C are related within the same genus. Or where one relation only (either A – B or B – C) is within the category of subject and attribute, there is a valid conclusion within the category of either A – B or B – C." To express the same otherwise, "There is no conclusion where the relations are heterogeneous unless one of the two joins an attribute to a subject. In the latter case an inference is possible even outside the category of subject and attribute."

§ 2. We found first in our examination of the syllogism that there were inferences which fell outside its single category of subject and attribute. We found again that if we kept outside *all* special categories, mere interrelation was much too vague to form a bond. The conclusion, which in the next place naturally offers itself, is that inference must take place within several special categories (such as time, space, subject and attribute, &c.) but must always be confined in each case to one category. To get a relation of time in the conclusion you would have to keep in your premises to time-relations, and the same thing again with other kinds of relation. And, if this were true, the axiom would run, "Things related to the same within one kind will be interrelated within that kind."

But there are inferences which will not submit to this principle. "Gold is heavier than lead and lead is a metal," "A runs faster than B and B is twice as tall," "A is stronger than B and B is full grown," "A is equal to B in weight and B is moved with such or such velocity" are premises which certainly will yield conclusions, and yet their relations are heterogeneous. And this shows that we may cross from category to category. On the other hand we are unable to

do this unless there exists a special condition; one relation must be that of attribute to subject. From "A is equal to B and B has such velocity" we have seen you can not get to the conclusion "A has such velocity." You can not do so till you predicate of A that point in B which brought it into relation with the other element (C). And from "A is equal to B and B is in my pocket" you can not infer that A is in my pocket, since the spatial relation which is affirmed of B is not true of B as equal to A. You can not argue to a relation of A to my pocket, but your conclusion must be "A is equal to something which is in my pocket." We have still the old relation of A to B, but qualified by the addition of an adjective of B. And it is true, I think, in all possible cases that the relation between a subject and attribute is the only one which, if used with another category, is able to give us a new relation.*

The remarks we let fall in a previous chapter (II. § 7) may have prepared the reader for our result. The categories do not stand on one and the same footing. It is possible after all to express unconditionally the principle of inference, and it is possible to do this within the one category of subject and attribute (p. 271). But we are not yet arrived at the stage where this is possible, and must content ourselves here with the formula that ended the foregoing section, "Related to the same within the same kind are interrelated within that kind," with a further axiom of possible inference where one relation is that of subject to attribute.

§ 3. Our main principle, it is obvious, will have as many forms as there happen to be categories or kinds of relation. It is not the business of this work to elaborate any theory as to how these kinds are connected or are subordinated. It is again not our purpose to draw out and defend a complete enumeration or scheme of such classes. But in order to

* Other examples are "A has a voice (B), that voice overpowers Z's voice (C), therefore A overpowers C." "A has a voice (B) which is in tune with C, therefore A has something in tune with C." In the first of these the relation of the conclusion is hardly between a subject and attribute. A by virtue of its attribute, which attribute acquired a momentary independence, has got a new relation to another subject.

make clear the general result, I will state and illustrate four or five main principles which operate in inference. We may call them the principles (i) of the synthesis of subject and attribute, (ii) of identity, (iii) of degree, (iv) of space, and (v) of time.

I. *Principle of synthesis of subject and attribute.*

(α) The attributes of one subject are interrelated.

(β) Where two subjects have the same or a different attribute they are alike or different.

(γ) (i) Where the attribute is not taken as distinct from every subject, what is asserted of the attribute is asserted of its subject. (ii) Where the subject is not taken as distinct from every attribute, what is affirmed of the subject is affirmed of any attribute considered as its attribute.

Examples. (α) This man is a logician, this man is a fool, therefore a logician may be * (under some conditions is) a fool.

(β) This dog is white, this horse is white (or brown), this dog and this horse are alike (or different).

(γ) (i) This figure is a triangle, a triangle has the angles equal to two right angles, this figure has the angles equal to two right angles. (ii) Gold is heavier than lead; lead is a metal. Therefore lead-metal (or some metal) is lighter than gold, or metal may be lighter than gold.

I may remark on (γ) that, if we were to say "What is true of the attribute is true of the subject, and what is true of the subject is true of the attribute," we should fall into an error. The subject *qua* subject and the attribute *qua* attribute have each predicates which can not be applied to the other. Thus "Iron is heavy, heavy is a quality" is no ground for the assertion "Iron is a quality," nor from "Iron is heavy, iron is a substance," can you go to the conclusion "Heavy may be a substance" (*cf.* Book I. Chap. III. § 10). If on the other hand we laid down as a condition of the inference that this attribute and this subject must be taken together, we should then have become circular.

II. *Synthesis of Identity.*

Where one term has one and the same point in common

* *May be* because, the subject being undefined, the conditions are partly unknown. Vid. Book I. Chap. VII. § 26.

with two or more terms, there these others have the same point in common.

Examples. "Coin A has the same inscription as coin B, and coin B as coin C, therefore A as C;" "Instrument A is in tune with my tuning-fork (B), and so too are instruments C and D, therefore they are all in tune with one another;" "If A is the brother of B, and B of C, and C is the sister of D, then A is the brother of D."

III. *Synthesis of Degree.*

When one term does, by virtue of one and the same point in it, stand in a relation of degree with two or more other terms, then these others also are related in degree.

Examples. "A is hotter than B and B than C, therefore A than C;" "Colour A is brighter than B and B than C, therefore A than C;" "Sound A is lower in tone than B and B than C, therefore A than C." I will not enquire here whether "A = B and B = C, therefore A = C," falls under this head or under the previous head of the synthesis of identity.

IV. and V. *Syntheses of Time and Space.*

Where one and the same term stands to two or more other terms in any relation of time or space, there we must have a relation of time or space between these others.

Examples. "A is north of B and B west of C, therefore C south-east of A;" "A is a day before B, B contemporary with C, therefore C a day after A."

This list, as we have said, does not pretend to be complete, and it would not be possible for us here to discuss the questions which any such pretence would at once give rise to. Take for instance the synthesis of cause and effect. Does this fall entirely under the head of time? Does it fall under the head of subject and attribute? Does it fall under both or again under neither? The answers to these questions would be hard to get, and, if we got them, they would be of no use to us here. They would not much serve to confirm the result we already have reached; they would possibly supply one more illustration, where I hope enough have already been given.

§ 4. But there is another question which can not be passed by. We have called these syntheses Principles of

inference, and have ejected the syllogism to enthrone them in its stead. But how are we to understand the title they lay claim to? We know what the syllogism tried to accomplish, for it professed to control from a central office every possible event in all parts of its kingdom. It issued some two dozen forms of reasoning, to which all inference was expected to conform. Thus you had always some model with relations ready drawn between all the terms both in premises and conclusion, and no liberty was left you save to fill up the blanks with terms of your own. The moods and figures were a bed of Procrustes into which all arguments had somehow to be forced, and they were therefore not merely principles of reasoning, but actual canons and tests of inference. Within this pale you were secure of salvation, and on the outside it was heresy to doubt you were lost. Such was the claim which the syllogism put forth, and enforced as long as it had any strength.

Like some other chimæras that have had their day, the syllogism is effete and its realm is masterless; and the question for us who aspire to the inheritance is to know in what character we mean to succeed. Do we wish to substitute one despotism for another? Are our principles of inference to be tests and canons? Most assuredly not; for if the thing were desirable, and I am much too staunch a Protestant to desire it, it is at all events thoroughly impossible.

§ 5. Our principles give us under each head of inference the general and abstract form of the operation. They do not profess in all cases to give us the individual operation itself which is necessary. It is not merely that the terms are left blank, for the special relations of the premises and conclusion are also left blank. The kind of construction is indicated generally, and the kind of conclusion you will find within it; but the actual construction, and the actual new relation to which that will give rise, are left entirely to private judgment.

From such premises as "A to the right of B and B to the right of C," there is and there can be no form of reasoning which will give you the conclusion. It is true that the axiom goes so far as to assure you that A and C must be related in space, for you do not know that unless you know that the

two space-relations belong to one world. And you do not know this unless you are sure that they have a common meeting-point in space (Book I. Chap. II. § 21). But the axiom will not tell you anything beyond. It will neither give you the definite relation, nor even assure you that you will be able to attain to any such relation. A is greater than B, and C is greater than B, therefore (if the point in B is the same) A and C must certainly be related in degree; but you do not know how. B is south of both A and C, therefore A and C are related in space; but you have no means of getting to know their particular relation. For the individual construction can not here be drawn, and it is that alone which can supply the conclusion.

Where the inference is valid, the special operation by which it is performed falls outside the axiom, and it is impossible therefore that the axiom can supply any test of validity. Where the inference is invalid, what makes it invalid may fall without the axiom, and the axiom is therefore no test of invalidity. If I like to argue that, because A and C are both greater than B, they are equal to one another, the principle has nothing to say against it. If I choose to go from "B is south of both A and C" to, "therefore A and C lie east and west," again the principle is perfectly satisfied. It can no more tell me that here I am wrong than that I am right if I say, "A is due north-west of C, because B is five miles south of A and again the same distance west of C." The general form is valid in either case, but the actual operation, whether erroneous or correct, is in either case beyond the scope of the principle. It is not a matter for superior direction; it is a matter for private inspiration and insight.

§ 6. It is impossible that there should be fixed models for reasoning; you can not draw out exhaustive *schemata* of valid inference. There are principles which are tests of the general possibility of making a construction: but of the actual construction there can be no canons. The attempt to manufacture them would lead to the search for a completed infinity; for the number of special relations has no end, and the possible connections in time space and degree are indefinite

and inexhaustible. To find the canons of valid inference you must first make a list of valid inferences. You will manufacture a major premise for each, and that major premise derived from each operation will appear as its canon. Your success, if you succeeded, would be the capture of a phantasm, but in the endlessness of the field you would be for ever eluded. No canon will fix for us the pale of orthodoxy, until that day comes when the nature of things will change itself to gratify our stubborn illusions.

§ 7. The popular belief in logic endows it with ability to test all reasonings offered it. In a given case of given premises the logician is thought to be a spiritual Director who, if he can not supply, at least tests right and wrong. Thus, if logic is no art which provides us with arguments, yet, once give it the premises, and it is both the art of extracting conclusions and of assaying all those which amateurs have extracted without its authority. But, understood in this sense, logic has no existence, for there is and there can be no art of reasoning. Logic has to lay down a general theory of reasoning, which is true in general and in the abstract. But when it goes beyond that, it ceases to be a science, it ceases to be logic, and it becomes, what too much of it has already become, an effete chimæra which cries out for burial.

§ 8. It should not lie alone. There is another false science more unlovely in life and more unpleasant in decay, from which I myself should be loath to divide it. Just as Logic has been perverted into the art of reasoning, so Ethics has been perverted into the art of morality. They are twin delusions we shall consign, if we are wise, to a common grave.

But I would not grudge Casuistry a Christian burial. I should be glad to see it dead and done with on any terms; and then, if all the truth must be spoken, in its later years it has suffered much wrong. That it became odious beyond parallel and in parts most filthy, is not to be denied; but it ill becomes the parents of a monster, who have begotten it and nourished it, to cry out when it follows the laws of its nature. And, if I am to say what I think, I must express my conviction that it is not only the Catholic priest, but it also is our Utilitarian moralist, who embraces the delusion which has borne such a

progeny. If you believe, as our Utilitarian believes, that the philosopher should know the reason why each action is to be judged moral or immoral; if you believe that he at least should guide his action reflectively by an ethical code, which provides an universal rule and canon for every possible case, and should enlighten his more uninitiated fellows, then it seems to me you have wedded the mistake from which this offensive offspring has issued. It may be true that the office of professional confessor has made necessary a completer codification of offences, and has joined doctrinal vagaries to ethical blunders. We may allow that it was the lust for spiritual tyranny which choked the last whisper of the unsanctified conscience. It may be true that, in his effort theoretically to exhaust the possibilities of human depravity, the celibate priest dwelt with curious refinement on the morbid subject of sexual transgression. But unless his principle is wholly unsound I confess that I can hardly find fault with his practice; for if there is to be an art and a code of morality, I do not see how we can narrow its scope beforehand. The field is not limited by our dislikes, and whoever works at the disgusting parts, is surely deserving not of blame but of gratitude. Hence if the Utilitarian has declined to follow the priest, he has also declined to follow his own principles; he has stopped short not from logical reasons but from psychological causes.

§ 9. It is natural to think that logic has to tell us how we are to reason from special premises; and it is natural to think that ethics must inform us how we are to act in particular cases. Our uncritical logic and our uncritical ethics naturally assume these doctrines as self-evident. But the mistake, if natural, is in both cases palpable. Unless you artificially limit the facts, then models of reasoning can not be procured, since you would need in the end an infinitude of schemes to parallel the infinitude of possible relations. And a code of morality is no less impossible. To anticipate the conclusion in each special case you would have to anticipate all possible cases; for the particular condition which makes *this* conduct right here and wrong elsewhere, will fall outside the abstractions of the code. You are thus committed to a dilemma: at

a certain point you must cease to profess to go right by rule, or else, anticipating all possible combinations of circumstances, you must succeed in manufacturing countless major premises. The second alternative is in the first place illusory, since the principle is really got *from* the intuition, and in the next place it is impossible, since the number of principles will be limitless and endless. But if you accept the first alternative, and admit that only in certain cases it is possible to deduce the conclusion from a principle, you have given up the hope of your "practical reason," and denied the axiom from which you set out.

The syllogistic logic possesses one merit. If its basis is mistaken and its conclusion false, at least it has not stopped short of its goal. In *Barbara Celarent* its code is perfected, and it has carried out the purpose with which it began. We can not say so much of the Casuistry of Hedonism. The confident dogmatism of its setting-out has been lost in vagueness and in hesitation. It flies to ambiguities it does not venture to analyze, and sighs faintly to a Deity which it dares not invoke. But if the principle of our most fashionable Ethics is true, then an art of Casuistry and a Science of Sin are the goal of that Ethics, and the non-recognition of this evident result, if creditable to the heart, does no honour to the head. If the popular moralist will not declare for a thorough-going Casuistry, if he retires in confusion from the breath of its impurity, he should at least take courage to put away the principles which have given it life. We may apply to him as he stands a saying of Strauss, "He partly does not know what he wants, and partly does not want what he knows."*

§ 10. If we return to the subject of the syllogistic logic, we may see on the one hand that its moods and figures will not take in any one of our syntheses except the synthesis of subject and attribute. The fifth, the fourth, the third, and the second, refuse to enter the traditional limits. On the other hand the first of our syntheses covers every argument of the syllogistic logic. An inspection of the figures would at once assure us that with positive reasoning this assertion holds good, and we must now proceed to test our conclusion by applying it to the subject of negative inference.

* Compare on the subject of Casuistry my pamphlet, *Mr. Sidgwick's Hedonism*, § 8, and *Ethical Studies*, pp. 142, 174, foll.

CHAPTER V.

NEGATIVE REASONING.

§ 1. The general nature of negative reasoning does not vitally differ from that of positive. We have, given us in the premises, two or more relations presenting us with certain identical points, and on the basis of these points we combine the relations into an individual whole. We then by inspection find a new relation within that whole. The conclusion may connect two terms directly, as in A – B – C ∴ A – C, or it may connect them indirectly, as A – B – C ∴ A – (B)C, or A(B)–C. The new line that is drawn may fall clear of the middle-point of the construction, or may pass through it on the line of the old relations. Negative reasoning and positive have all these qualities in common. It is true that in a negative inference the line that connects the terms of one relation is a line of denial; one part of the figure, which ideally we construct, consists of a repulsion; and the fresh connection we draw from that construction is a connection by exclusion. But these differences are varieties within the same main principle.

§ 2. It might seem as if nothing remained for us to do but to state and illustrate those negative formulæ which correspond to the axioms of affirmative reasoning. And to this we shall at once proceed to address ourselves; but it is right to premise that there are further difficulties which lie in wait for us at the end of this section.

In negative reasoning we may so state the principle, "If B is related within one genus positively to A and negatively to C, then A and C are negatively related within that genus. And if the affirmative and negative relations (A – B, B – C) are heterogeneous, yet, if one is in the category of subject and attribute, there is a negative inference within one or both of

the two categories which have appeared in the premises.' Unless A – B B – C are within the same genus, or unless one is a relation of subject and attribute, there is no connection at all.

I. *Synthesis of subject and attribute.*

(*a*) Where the attribute is not taken as distinct from every subject, what is denied of the attribute is denied of the subject, and where the attribute is denied the subject is denied.

(*b*) Where the subject is not taken as distinct from every attribute, what is denied of the subject is denied of its attributes, and where the subject is denied then, in that sense, the attribute is denied.

(*c*) Where two subjects have the same or a different attribute, they are so far not different or not the same.

Examples: (*a*) "A triangle has not got two right angles; this is a triangle, and has therefore not two right angles." "A rectangular triangle is not equilateral; this figure is equilateral, and therefore can not be a rectangular triangle." (*b*) "Man is not a quadruped, man is a mammal, therefore a mammal may be (the human mammal is) not a quadruped; and a quadruped is not a mammal in every sense of that adjective." (*c*) "My horse is vertebrate, this animal is a worm, and therefore is not the same as my horse."

II. The Synthesis of Identity must become a Synthesis of Identity and Difference, "Where two terms have the same point in common, and one of them by virtue of this point is different from a third, there the other and the third differ in this same point."

Example: "A piano (A) is in tune with B, which is not in tune with C, and therefore A and C are not in tune with each other."

In the Synthesis of Degree, of Space, and of Time, we have no occasion to alter the formulæ. We may give as examples,

III. A is as heavy as B, B is not lighter than C, therefore A is not lighter than C.

IV. A is not before B in time, B is contemporary with C, therefore A is not before C.

V. A is due east of B, C is not north of B, therefore C is not north of A.

§ 3. We seem to have performed our task successfully

but must deal with a further complication. We may be taken to have sinned against two prominent rules of the traditional logic, since on the principles we have given you may get a conclusion from two negative premises, and that conclusion may at least in part be affirmative. Yet I can not reject these traditional rules as errors, and if they have committed oversights is a question which turns on their interpretation. Without doubt if you interpret negative premises strictly, that is, take them in the shape of bare denials, then the rule which forbids an inference is valid. And the second rule, which confines the conclusion to a mere denial, is without doubt valid unless you break through another syllogistic precept. If you insist on eliding the middle term, then not only must the result be partly negative, but it really is limited to a judgment which denies. And thus, if in their statement the rules turn out to have gone too far, they at all events have been based on a solid foundation.

It is not hard to understand this; from two bare denials there can come no conclusion, because there can not be any construction. Why no construction? Because there is either no common point, or, if there is a common point, because you do not know the position of the other terms. Let us take the last first; in negative reasoning we may represent the denials by lines of exclusion; but, if we interpret the premises strictly, we find ourselves unable to give these lines any definite position. A is not C nor B, but the exclusion of C and the exclusion of B, though we represent them truly by lines of rejection, fall we know not where. The excluded has got no determinate position, and therefore no known relation to other elements.

And this is not all, for if we wish to see the real state of the case, we must go back to our doctrine of the negative judgment (Bk. I. Chap. III.). A mere denial does not in any way give existence or position to the thing it denies. Thus in "A is not B" we assert the simple rejection of B by an unstated quality belonging to A, and in respect of B we know nothing at all but its banishment from our universe. But it is obvious that, when a term is so banished, we know about it nothing definite save its rejection by A. No matter then how many negative premises we may have, since by adding to the

number of our banished terms we do not get any nearer a conclusion. The exiles do not move in any real world at all, and to unite them by a line of connection is impossible.

Thus even if two denials have a common subject, we can not go from those denials to a further relation.* And we are stopped elsewhere by another obstacle, for we have not got the common centre required for a construction. In "A is not B and B is not C," we have in the one case the exclusion *of* B, and in the other case the exclusion *by* B; we have first absence and then presence. And again, if we give our premises another form and say "B is not A and B is not C," we can not go to a relation between A and C, since (apart from other reasons) the quality of B may be quite different in each denial. Perhaps from "C is not A and B is not A" we might be tempted to argue to a positive relation of partial identity between C and B. But here again our centre would be wanting, for we do not know if the quality which ensures the rejection is not wholly different in each of these cases. And thus our premises may furnish a ground for suspicion, but they no more give us proof than would such positive premises as "A is like B and C," or "A is like B, and B is like C." In short given two denials there is either no common point, or else the two relations which start from that centre terminate in nothing which can be related.

The rule which forbids all the premises to deny is thus shown to have a solid foundation; and we may say the same of the rule which prohibits a positive conclusion. For since the predicate denied is completely expelled from the world of the subject, we are left with no relation beside the repulsion. It is clear then that you can not have a positive connection either between the predicate and that which exists in friendship with the subject, or between the subject and what shares the fortunes of the predicate. In "A – B B – C," if one relation is negative, we can not in any way draw a line A – C which falls outside B. For A and C will be separated in two different worlds, and if one is in any way to come in

* In "A is not B and not C, therefore B and C are so far alike" the premises are positive. B and C are both disparate in quality with A, or have the psychical fact of rejection in common.

contact with the other, the line of connection must pass through B. But on one side of B is a mere rejection, and it is therefore evident that a positive line can not be drawn beyond the centre, and that the new relation must add to the rejection which already exists in B. It is indeed not true that this extension is a *mere* denial, and again it is not true that the conclusion must be *wholly* negative ; but for all that the second traditional rule has, like the first, a rational foundation.

§ 4. But though both the precepts stand on a solid basis, the meaning of the first calls for some restriction, and the second is not true without an exception. Two denials should not give a conclusion at all, and yet you can not say that of two premises which deny. In his *Principles of Science*, p. 63, Prof. Jevons has called attention to the subject ;

> "Whatever is not metallic is not capable of powerful magnetic influence, (1)
> Carbon is not metallic, (2)
> Therefore, carbon is not capable of powerful magnetic influence (3)."

This argument no doubt has *quaternio terminorum* and is vicious technically, but the fact remains that from two denials you somehow *have* proved a further denial. "A is not B, what is not B is not C, therefore A is not C ;" the premises are surely negative to start with, and it appears pedantic either to urge on one side that "A is not-B" is simply positive, or on the other that B and not-B afford no junction. If from negative premises I can get my conclusion, it seems idle to object that I have first transformed one premise ; for that objection does not show that the premises are not negative, and it does not show that I have failed to get my conclusion.

And if we leave the limits of the syllogistic logic examples come to us from every side ; "A degree A can not be less than B, B is not less than C, therefore C can not be greater than A, or A must be equal to or greater than C ;" "Event A is not before B, C is not after B, therefore A is not before C, or C is simultaneous with A or before it ;" "C is not north of B, B is not north of A, therefore A is not south of C, or A is due east, or west, or on the north side of C." It is bootless here to fall doggedly back on the technical rules of mood and figure, since, if we keep to these, we can not even

prove the positive conclusions from the positive premises. If "A to right of B" is a positive relation of A to B which can not be reduced to predicate and copula, why should we not have in "A not to right of B" a negative relation which is also irreducible? The traditional logic may object to the latter, but it has put itself out of court by first objecting to the former; and, if it is quite wrong in one case, it may be quite wrong in another.

§ 5. In this case it is not wrong, for it happens to be right. The restricted portion of the field it occupies happens here to be the limit of the subject. For denial as such can not fall outside the single category in which the syllogism is shut up.

A denial as such, we have seen long ago, is merely the exclusion of an ideal suggestion, and hence no negative relation between positive existences can ever be expressed by a mere denial. But then on the other hand a *bare* denial can never be found, for, when A excludes some relation to B which is offered in idea, there must always be a ground for that rejection. The base of the rejection must be a positive quality, unspecified but necessary; and hence, wherever we have negative judgment, we have in addition some positive assertion, which may not be explicit but which must be there. And this, as we saw, is such a fount of ambiguity that in denials we seldom know all we are saying (p. 120).

We may verify this in the examples we have used. In the first we assume that A has degree, and upon that basis of positive assertion we proceed, by exclusion of the alternatives denied, to a positive result. In the second the argument really starts from "A is an event with a position in the series after or simultaneous with B." In the third we assume that A falls in space and in a relation to B marked out by exclusion. In all these if we kept to mere denial we could not prove anything, since we may deny "less than B," or "prior to B," or "north of B," of what has no degree and no time and no position. Such a course might be unusual but is legitimate and recognized, because the denial as such covers all possibilities.

§ 6. If we take as our rule that from negative premises you can not argue, then, stated so, that rule is incorrect; and it is false even to say that denials give no inference, since every

denial has a positive side. That positive side is latent and may escape us; in "7 is not less than 5 + 1, 5 + 1 is not less than 4, and therefore 7 is not less than 4," we do not *say* that 7 is a number at all and must stand in some numerical relation with 5 + 1. And thus in assuming it we have passed beyond the denial, though not beyond what the denial implies. It is necessary therefore in expressing our rule to make a distinction. You can not argue, we must say, from two denials, so long as you keep to bare denial. If you treat the assertion which those denials imply, then you are not keeping to the side of denial. And, if we formulate it so, the rule will hold good.

Denial implies removal or exclusion, and from exclusions or removals you can get a conclusion. "Removal of A is removal of B, removal of B is removal of C," gives "Removal of A is removal of C;" and "Absence of A is absence of B, absence of B is absence of C," proves that absence of A is absence of C. But here our real premises are "*What* removes A removes B," and "*That which* is without A is also without B." You can hardly say that these premises are quite positive, but they contain much more than a bare denial. Thus negation must always remain ambiguous (Book I. Chap. III.), for "No A is B," may merely banish B, while again it may assert "The absence of A is the presence of B." "If A is there then B will not be there," and "Since A is not there B must be there" are both expressed by this doubtful formula. But if we confine negation to mere denial it is the exclusion of an idea by an unspecified quality, and if we confine the denial to its negative side it is the mere exclusion of a suggested idea. It is upon this last understanding that the traditional rule is actually valid.

It would not be valid if negation were assertion. If in "A is not B" the exclusion of B were a condition necessary to the existence of A, then B must be banished if A is to be there, and if B is not there B can not be banished. And from negative premises, if so interpreted, it no doubt might be possible to get some conclusion. But this interpretation we long ago saw was erroneous. The denial excludes an ideal suggestion, and the fact which lies at the base of the exclusion

need be no relation of A to B, but on the other hand a quality of A or again of some more ultimate reality. But this quality is latent and wholly unspecified.

§ 7. We have seen that, upon a strict interpretation of negative premises, the first of the rules we mentioned is valid. What then is to become of our principles of synthesis, since they collide with the rule and can not be true? But I think it is better to leave them standing, for they are valid if the sense of negative premises is not confined to what they deny.

Otherwise of course they must be corrected. It is impossible to have any negative inference which will fall wholly within the categories of identity, or time, or space, or again degree. One premise at least must confine itself to the relation of subject and attribute.

This is very obvious. One premise must deny, and no denial as such can be referred to any category beyond the relation of attribute to subject. The denial is the exclusion of an ideal suggestion, and a relation of time, or space, or degree falls within this suggestion which the subject repels. It is clear then that the denial of a connection, say of space, is not a connection in the category of space. The subject excludes, it is true, by a quality, but you do not know what that quality is. And since you do not know what quality repels, the repulsion and the quality which forms its basis can not pass beyond the sphere of simple attribution. Thus "A is not north of B," if restricted to denial, means "A repels the suggestion A to north of B;" and we can not possibly take this as anything more than an adjective of A.

If we refer to the examples we gave in illustration (§ 2), we must so interpret the negative premises. "B is not in tune with C" means "B excludes the attribute of being in tune with C," and "B is not lighter than C" means "B excludes a certain relation of degree to C." But of course B might repel these relations with C although it possessed no note at all, and although it had no degree of any kind; and in the same way the denial that B is in such a position may be true though B has no place whatever. If one of the premises be confined to denial that premise is shut up within the category of subject and attribute.

But having so restricted the character of our premises it is natural to expect a restricted result. Our rule will now be, "In all negative inferences the conclusion is confined within the relation of subject and attribute, *unless that conclusion can in any way be affirmative.*"

§ 8. But can the conclusion be anything but negative? This is the question we have next to discuss. The rule forbade an affirmative result, and we saw that this rule was based upon truth. For since in A – B B – C one relation is negative, A – C can not be joined by a line of connection which passes anywhere except through B. And, since part of this line must consist of an exclusion, we saw that A – C must have a negative character (§ 3).

The result is unshaken, but it omits a possibility. The conclusion need not take the form of A – C, since the result which we get from the union of our premises, may be found in the whole ideal construction. The syllogistic practice is to elide the middle; but if we do not choose to perform this elision, who on the one hand can order us to do so? And on the other hand who can deny that the result which we obtain is a real inference? "A takes precedence of (is lighter than, sits on the right of) B, B is not younger than C, therefore A takes precedence of (is lighter than, sits on the right of) a person (B) not younger than himself." There is here no direct conclusion A – C, and there is again no inference within one category, and at the same time one premise seems to be used as mere denial. On the other hand I see no reasonable ground on which we can deny that we have got a conclusion. Yet this conclusion is neither a mere denial, nor does it fall within the category of subject and attribute.

We may go beyond this. In the syllogism itself, if we decline to elide the middle term B, we may have an inference the conclusion of which is more than a denial. Take an instance in *Celarent*, "A lung-breathing animal (B) is not a fish (C). All Cetacea (A) breathe by means of lungs (B)." From this the regular conclusion is "A is not C." But "All Cetacea have a quality, viz. breathing through lungs, which excludes the assertion that any are fish," will surely come without flaw from the premises. It certainly is more than a bare denial,

and it is no mere repetition of the premises. And to say, If A does not exclude C after the middle has been elided, there shall be no inference and there can be no conclusion, seems purely arbitrary. Nor indeed do I see how this insistance on elision, if we pressed it to its consequences, would prove compatible with the general validity of the third figure.

§ 9. The result we are left with may thus be stated. From two denials there is no conclusion. If one premise denies and keeps to denial, then one premise at least is limited to the *genus* of subject and attribute. If the middle term B falls out of the conclusion, if A and C are connected through B, but not by means of an intermediate B, then the conclusion denies and falls also within the above-named *genus*. But if B is kept standing, the conclusion may at least in part be positive, and is not confined to a single category.

The general formula for negative reasoning, if we confine ourselves to the side of bare denial, may be stated as follows: If B repels a content C, and is in relation with a third term A, then A and C will either be related directly by way of denial or else will be elements in a whole A – B – C, of which at least one member will be confined to the *genus* of subject and attribute. And I think with this we may take leave of a subject which has proved perhaps more troublesome than interesting.

CHAPPER VI.

TWO CONDITIONS OF INFERENCE.

§ 1. We may briefly recapitulate the result we have reached. An inference is always an ideal construction resulting in the perception of a new connection. So far as this perception of the conclusion is concerned, there is no possibility of laying down rules, and the syllogistic logic teaches a superstition. That logic again has failed to include all the principles of synthesis which operate in construction, and it is falsely confined to a single category. It is wrong again as to the number of the premises; and in insisting on the necessity of a major premise, it is clinging blindly to exploded metaphysics in direct defiance of the most palpable facts. And it makes a further mistake as to the necessity of elision.

It might seem that having thus rejected the syllogism we must throw in our lot with its hereditary enemies. But yet, if the friends of the syllogism will allow it, we would rather take a place on their side. Our differences are trivial compared with our agreements, and as against the enemy our cause is the same, for we have in common these two beliefs: (i) It is impossible to reason except upon the basis of identity, (ii) It is impossible to reason unless at least one premise is universal. It will be time to say *vicerunt empirici* when these positions have both been forced.

§ 2. (i) I will begin with the necessity of an identical point. We know that an inference is an ideal construction, and the reality of this construction depends on its unity; if the construction is not individual it is merely fictitious. But how can any construction have unity unless it is united by a common point? And how can any point be common, unless in both the premises it is one and the same?

It is obvious that suppose the problem before us is to find

the relation of S to P by means of their common relation to M, and if, by the hypothesis, S – M and M – P must be given separately, an advance is impossible, unless in both premises M is the same. Given $S-M^1$ & M^2-P you can make no construction, for you have no bridge to carry you over from M^1 to M^2. The back of your inference now is broken and the extremities no longer belong to any individual principle. Unless M in both cases is absolutely the same you can not inter-relate S and P.

If we are willing to give up the superstition of the copula and to admit a diversity of relations in judgment, we may say that in inference every pair of premises has one term the same, and that, if it is not the same, there can be no inference.

§ 3. It is obvious, if we dismiss our hardened prejudices and consider the question fairly by itself, that you can not argue on the strength of mere *likeness*. Whatever else may be right this at all events must be wrong; "A is similar to B, and B to C, and therefore A is like C," is a vicious inference, one that need not always be mistaken in fact, but that always must be a logical error. In practice I think we should all admit this. An inference based on nothing but likeness is utterly invalid; it is certainly ambiguous and probably false.

Likeness and sameness should never be confused, for the former refers properly to a general impression. Similarity is a perceived relation between two terms which implies and rests upon a partial identity. If we say that A and B are alike, we must be taken to assert that they have something the same. But we do not specify this point of sameness, and the moment we do that we have gone beyond mere similarity. If A and B for instance both have lungs or gills they are so far the same, and, on the strength of and because of this partial identity, they may present themselves to us as generally similar. But now add to these the further statement "B and C are alike." If we reduce the likeness here to partial identity we *may* find that the common point is here once again the possession of lungs or gills, and on the strength of this we may go on to argue that A and C (the extremes) are alike. But what actually inter-relates A and C is not general similarity at all. If all you knew was that B was like C, the

point of identity would be quite unspecified, and the fact might be, not that both had lungs or gills, but that each had one eye or the freedom of the will. In this case though each pair has its own internal likeness, you could not infer the similarity of A to C.

And if in answer I am told that this is irrelevant, and that it does not apply where the likeness is exact, I can only reply that I am waiting, and have been waiting for years, to be told what is meant by an "exact likeness." "A and B are not the same, but they are exactly alike, and therefore whatever is true of B must be true of A." But what can this mean? In the case of some twins it might be right to punish one for the other, and we should no longer care to identify criminals. If a picture is "exactly like" a person, then if one is not dead the other will be alive. If a cast is "exactly like" an original I suppose the same thing will be in two places at once; and it is no mere metaphor if in certain cases the father is said to survive in his children, though the children might then cease to survive the father. But it is idle to pursue these frivolous consequences; the meaning which "exactly like" carries to my mind is nothing whatever but "partially the same" or "identical in some point or points." Likeness is always a perceived relation based upon a partial identity. In mere general similarity the identity will be indefinite, where the likeness is more special it must at least be partly defined, and where the similarity is called "exact" I understand that there is a definite point or points, in respect of which the sameness is complete. And if likeness did *not* imply identity all inference based upon it would be vicious. In practice every one would allow it to be vicious, nor do I understand how in theory it is possible to take it as having any other character.

I am most anxious to enter into (if I can), and to discuss the meaning our "advanced thinkers" may have attached to "likeness" or "similarity." But I am forced to say again in this place what I had to say elsewhere some years ago.* While our "advanced thinkers" merely sing the old song which they have learnt and which their fathers have taught them, they can hardly expect to have its meaning discussed

* *Ethical Studies*, p. 151.

nor can they complain if they are treated as having no real meaning.

§ 4. A construction of given premises is not possible unless each pair of premises has a common point. And this common point must be an identical term. Thus in "A – B B – C therefore A – B – C," the B in each premise must not be merely alike, but must be absolutely the same. But here, after having avoided one error, we are threatened by another and opposite mistake. For if it is wrong to say that B is not the same, it is equally wrong to deny that it is different.

This may look mysterious but is really quite simple. If B in both premises were so far the same that no difference of any kind belonged to it, then it is obvious at once that both premises must be identical, or else that their differences do not concern B. But in each of these cases the inference disappears. If the premises are the same their repetition is meaningless, and if the differences they contain are indifferent to B it is clear that no construction can be made, since, if B is the centre, it carries no *radii* and has no circumference. An identity which is not a synthesis of differences is plainly inert and utterly useless.

B is the same amid difference, and though different is the same, for it is an ideal content, the product of abstraction, appearing in and differenced by two several contexts. So far as it is the one content B, so far it is absolutely and entirely the same; so far as it is a member of diverse connections, so far it carries with it a difference. And the process of inference depends entirely on this double aspect; for it is because B is different and yet the same, that its differences are able to be interrelated. If it were not different it would have nothing to connect, and if it were not the same there could be no connection. Inference rests upon the assumption that, if the ideal content is the same, then its differences will be the *radii* of one centre. In other words if B is the same, what is true of it in one context is true of it in another.

§ 5. We have returned to what we called the Principle of Identity (Book I. Chap. V.). We might call it again the Axiom of the Identity of Indiscernibles, and we can put the thing in more simple language if we say that inference rests

on the principle that what *seems* the same *is* the same, and can not be made different by any diversity, and that so long as an ideal content is identical no change of context can destroy its unity. The assumption in this principle may be decried as monstrous, and I do not deny that perhaps it is false. In a metaphysical work this question would press on us, but in logic we are not obliged to discuss it (Book III. Part II. Chap. IV.). The axiom may be monstrous or again it may be true, but at least one thing is beyond all doubt, that it is the indispensable basis of reasoning. It may be false metaphysically, but there is no single inference you possibly can make but assumes its validity at every step.

§ 6. It is easy to misunderstand it, and it is sure to be misunderstood. I shall be told that spaces and times are indiscernible and yet are not identical. But this objection rests on a complete mistake. As spaces or times of a certain character A and B surely *are* identical; as different elements within the same series A and B are surely *not* indiscernible. It is one superstition to think you have relations whose terminal points are nothing beyond the relation.* It is

* I am prepared to go a good deal beyond this. If occasion offered I should be ready to argue that you can not have a relation between points that are not different in quality. Not only, for instance, must spaces related be more than a mere relation in space, but they must also have a difference in quality. It is not possible to contemplate points in relation unless you distinguish them by a qualitative reference to the right or left or upper or lower sides of your body, and the different sensations which are at the root of these divisions, or again unless, by a qualitative mark such as A or B, you choose to make one different from the other. It may be objected that in certain cases the difference of quality is only one aspect of the whole relation. This view at least recognizes the existence of the difference, and I will not here discuss it. The ultimate connection of quality and relation is a most difficult problem. But it is clear that taken in their phenomenal appearance the one can not be reduced to the other. Is this double aspect true of the reality? Has that, as we are forced in the end to apprehend it, a single nature which combines two sides, and is so the root of the double appearance? Can we suppose that qualities are generated by the strife of some counterpart of what appears to us as relations? Or is it true that supersensible qualities are the reality which *we* perceive as phenomenal relations? Or is the question unanswerable? If it is, we at least must not do violence to the given on the strength of a theory which we can not defend (cf. Book I. Chap. II. § 65 foll.).

another superstition to fancy relations as an arbitrary network stuck on from the outside by destiny or chance, and making no reasonable difference to anything. And the root of both superstitions is the same. It is the refusal to recognize that the content of the given has always two sides, sensible qualities and relations, and that one side can never, except by an artifice, be separate from or merged in the other. I do not say that these two elements are metaphysically irreducible; I do say that, taking them each as it stands, you must treat them each as a character of the given. It is a dire illusion to take the content of the given as either qualities without relation or relations without qualities, or to treat the one side as external to the other. Both are given together and given within the content. It was shown above (Bk. I. Chap. II. § 21) that space and time-relations are no *principium individuationis;* for they fall within the *what,* and do not make the *this.*

And another result was brought out in that Chapter. Unless judgments of sense make a false assertion they affirm or deny connections of content, and they do not affirm anything else whatever. It is absurd to object that if Cæsar is the same, he is in Gaul and in Italy, two places at once, or that if he is thirty he is also twenty-nine. The "at once" and the "also" conceal the old error. Of course it is not true that the identical Cæsar *under the same conditions* can be differently related to Italy in space or to his own birth in time; but then surely the conditions vary indefinitely. The mere lumping together unspecified conditions under the head "is now" does not show that the conditions are indiscernible, and that striking the differences out of the account we are forced to predicate contradictions of Cæsar. What is true of Cæsar in a certain context is true of the same Cæsar in any other context. But this does not mean that one context *is* the other or is to be confused with the other. It means that Cæsar has two different contexts, and that the truth of one can be no reason whatever for the falsehood of the other. If we fancy this is so we have given to one or to both assertions a meaning which is *false,* and we must be sent back once more to study the discussions of Book I. Chapter II.

§ 7. And there is another misunderstanding against which we must guard. That what is true of B here is true of B everywhere, means that, wherever B happens to be, you can say of it always what you have said of it once. This B you assert of is the self-same B that appears in the differences, but it is not the B just *as it appears* in those differences. In A – B, B – C, the B is identical and A and C are connected by that identity. But A and C are not themselves identical, and you can not predicate B – C of A – B. The B, of which what has once been said holds good for ever, is not the B which is one thing with A or one thing with C. It is the abstraction, the idealized content B, which is different from its contexts and yet connected with them and on the strength of its oneness connects them together. The identity is always a synthesis of differences which themselves are not identical the one with the other, and apart from these differences the identity disappears into blank indiscriminateness.

I will try to illustrate the whole question briefly. We have a shed in the corner of a field, and that shed being burnt another is set up not distinguishable in itself from the first. Let the first be B – A and the second B – C; in what sense is it true that what holds of B once will hold of it always? The objection is obvious, In the shed B – A an event D happened, but can we say that the event took place in B – C? And if we can not say that, and if B is not distinguishable, how are we going to defend our axiom?

We are in no kind of perplexity. The content B is obviously not the individual shed. The two sheds are made individual by their places in the series, and those places fall outside the abstraction B. What is true of B is universal propositions and is nothing besides. The event D can not be asserted truly until it becomes a hypothetical statement (Book I. Chap. II.).

But the objection will be pressed, "The sheds and their environment are a certain content, and that content is the same. If, on the strength of this content, we said of the shed B – A 'D happened here yesterday,' why can we not also upon this ground now say of the shed B – C 'D happened here last year'? The content is what we go from, and we have

that in both cases." I reply By all means: the content is the same. Let us try to carry out the process you recommend. We can not of course connect D with B – C unless we establish a chain of relations through the identity of their end-points (*ibid.*). You can not go *direct* from the content B to the temporal event D, for that, as we have seen, is not predicated categorically (*ibid.*). You must start from the content as given in one time. Well, starting from B – A you got a chain of events which took you back to D. But, if you start from B – C, you have a chain of events which takes you back first to the origin of B – C, when B did not exist, and then again through the destruction of B – A, to the time when B once more existed and was connected with D. Your process informs you that D the event will *not* fall within the identity of the ideal content B – C. That content has been qualified by a limitation in time, and qualified again by a definition of its component elements, which excludes their identity with the elements of B – A. If you deny that these qualifications are objects of knowledge, *then* I admit D *is* true of B – C, and why in the world should we *not* think it true? But if you admit that these qualifications are distinctions, then the content of the sheds is *not* indiscernible, and therefore by your admission is not identical.

This, I think, is a sufficient answer to the objection, but it omits to take notice of several difficulties. There are questions which no doubt might occasion us trouble, but they do not seem to concern us here. We have been forced to notice a metaphysical problem which, at least in this work, we can not deal with, and hence objections which we can not here attempt to answer may be directed against us. But at least on one side I think we are safe; we need fear no collision with the Philosophy of Experience, for that philosophy does not know the ground it stands on. Since Hume's bold speculations on the subject of identity were suppressed by himself, the English school has repeated a lesson by rote and flaunted a blind ancestral prejudice.

§ 8. The importance of the subject may excuse a repetition. That what is the same ideally is really the same is without any doubt an enormous assumption, and I do not say

that this assumption is true. What I do say is (i) that all inference presupposes it, and (ii) that the objection to it rests on nothing but metaphysics.

(i) If we only will look at the palpable facts, we must admit that logic stands or falls with this axiom. Wherever we join one premise with another we must do so by means of an identical point, which, given as it is in diverse presentations, is held to be the same because it has the same content, and which, so far as it is not ideally discernible, is taken as one. Failing this identity the construction falls apart. I confess I do not know how to make this any clearer. I can only say to any one who doubts it, Show me an inference where this does not hold good, and I will show you a vicious inference, and you yourself shall admit that it is vicious.

(ii) It sounds terrible to say that Identity is an ideal synthesis of differences, and that this identity is real fact. The words are strange to the common mind, but it has always tacitly accepted their meaning. We believe that a body has changed its place, but at the end of the movement the change that is past is no fact of sense. We abstract the body from its present position and, treating this abstraction as a continuous identity, we predicate of it the changing differences. But do we doubt that motion is a real fact? And if we are told, It is the material atoms which are the same throughout; then why I would ask do we take them for the same, despite their differences of time and space, except because their ideal content is the same? The identity of indiscernibles may be true or false, but not only is it impossible to reason without it, but it is the abstract formula for our common-sense belief.

The authority of common sense is no authority for me, but the result we have reached may bring out one fact. The objection, raised by the Philosophy of Experience against a real identity, does not rest on any difficulty felt by common sense, and it is not an objection it would ever think of raising. It is a metaphysical objection, and it rests entirely on a metaphysical doctrine. It is because the Philosophy of Experience is sure that there is no reality except exclusive particulars, that it is horror-struck at the thought of a real universal. And because its belief is not proved nor thought

to need proof, nor in any way discussed, because it is a mere inherited preconception which has got to think itself a real fact, it is scarcely so much to be called a doctrine as an orthodox dogma and traditional superstition.

And, as it must happen with all orthodox dogmas, its votaries do not take their professions in earnest. If an universal content may ever be real, on what ground can they deny the identity of thoughts because one is yesterday and the other to-day? But if such ideal sameness is *not* real, then how can any process or change or continuity be anything but illusion? If a thing *is* not now the same that it *was*, if it is only alike, then it can not have changed. And if it *is* the same, on what ground do we make that assertion except on the ground of identity of content? It is frivolous to say that identity may be real, where existence is continuous and is not broken in the series of time, but is not real anywhere else. For if you allow that any lapse or change is a fact, you have admitted the reality of an element not confined to this or that particular, and you have admitted it on the ground of the identity of indiscernibles. You have already thrown your principle overboard, and if it is false in one place it may be false in another. Or to put the same thing in another form, if you are afraid to break with common sense in one point, what makes you so very bold in another? If I am to answer the question for you, I am forced to say that you have partly no head and partly no heart. You do not see the consequences deducible from your doctrine, and when a consequence begins to look like a *reductio ad absurdum*, you refuse to follow it. And this is what we call or used to call "advanced thinking."

§ 9. It is against such opponents that the syllogism is right. The doctrine of copula and terms which it cherishes is indefensible, but it is right in demanding an identity in reasoning. The middle is an identity which connects the differences, and, being such an identity, the middle is an universal. In this point again the syllogism is right. For though the major premise is a superstition, one premise at least must be universal or else there can be no inference at all. We have here again a condition necessary to reasoning.

§ 10. We saw in the second chapter of Book I., and later on again in Chapter VI. § 39, that in the end no judgment is really particular. They are all universal. And we might content ourselves here with recalling the result we there have reached, but perhaps at the risk of superfluity, we may add some further remarks on the subject. If one of the premises were not universal, how could they both have a common identity? The term B must be shared by both the premises. It is a single content in two different contexts. But, since thus it is universal, at least one premise must have the same character.

This simple consideration is, I think, sufficient for any one who has put himself at the right point of view. But notwithstanding all our previous discussions, there no doubt will be readers still unwilling or unable to follow us in this argument. "In 'A precedes B and B precedes C' can B," we shall hear, "be really universal? Nay even in the syllogism, if we take the third figure, is the middle term really an universal? It is so technically because it is distributed, or understood in its full extension, but these technical distinctions have long ago been thrown overboard, and with them has gone the universality of singulars." I will briefly reply to the above objection.

§ 11. An universal judgment is one that holds of any subject which is a synthesis of differences. It is a proposition the truth of which is not confined to any single this. The subject extends beyond the judgment, and, where the subject goes, the judgment is true. In this sense we have seen that all judgments are universal. But we are limited here to a simpler issue, for we have to show, given a valid inference, that at least one premise is universal. It is quite enough, as we have just remarked, to consider the identity of the middle term: but a more detailed exposition may perhaps be welcome.

There are certain cases which call for no discussion. Where the middle term is an abstract attribute, and this forms the subject of one of the premises, there one premise must be allowed to be universal.*

* In order to bring arguments into this form we may freely convert any negative judgments. Thus in the second figure we may convert, as required, negative premises or conclusions. The case of *Baroco* presents no difficulty.

The difficulty which is felt arises from those cases where the middle term is a singular, or where it is not the ostensible subject of either premise. Take for instance "A is to right of B, and B of C, and therefore A of C," or "A and C have the note B in common, and therefore C is in tune with A, and both related by the identity of B." How in such inferences as these can we show that one premise must be universal?

§ 12. Unless our previous discussions have led us quite wrong, such a question as this can be readily answered. "B is to right of C" is an universal judgment because B is an identity which has the differences of its spatial relations to A and C. It transcends the context B – C and is therefore universal. Or, from another point of view, the relation B – C is true of a subject which extends itself beyond those limits, and is the identical subject of which the relation A – B is also true. If you take the relations as qualifying B, then B is the universal which exhibits these differences. Or again if you go somewhat further back, then the unity of the common space is the genuine subject of which these relations are diverse attributes. We can always find an identical subject although that subject need not be apparent. In "Cæsar is angry and Cæsar is silent, and therefore silence may accompany anger," it is the grammatical subject which supplies the universal within whose identity the synthesis holds good. But where from "A has a certain note B and C has also the self-same note," we infer a relation between A and C, it is doubtful where the actual subject lies. If we are willing to accept the grammatical subject, then in "C has the note B," C is our universal. For C is disturbed from its original context and expanded ideally so as to form a whole with A. And, if it were not universal, it could not be treated as a subject waiting to receive a predicate beyond its original given existence.* This would be the right interpretation if A and C are to be considered as subjects. But it is better here, I think, to take the middle as the actual subject of both the premises. B is the universal of which we predicate the difference B – A and

* Of course if you suppose the relation A – C to be a perception got simply from the given, then there is no inference and *cadit quæstio*.

the difference B – C, and it is the bond of identity which interrelates the whole.

§ 13. We shall see hereafter that every inference may be taken as holding within the identity of one subject (Book III. Part I. Chap. VI. § 34), and if we take this view it is obvious that the subject of both premises is universal. For the present it may prove sufficient to remember that, inference being an ideal construction and involving therefore an ideal centre, one premise must be taken as true beyond the limits of a particular subject. If we keep hold of this reflection we shall not be shaken by any puzzles which are laid before us. In the previous Book I have endeavoured to anticipate and to cut the root of those difficulties which are the most likely to be raised, and it is to the discussions of that Book that I must refer back the reader who is still inclined to hesitate.

In the ensuing Part of the present Book we shall criticize some inadequate views of inference, and shall begin with that belief which is most opposed to the doctrines set forth in the present Chapter.

BOOK II.—PART II.

CHAPTER I.

THE THEORY OF ASSOCIATION OF IDEAS.

§ 1. The end we had before us in the first part of this Book was to give a general account of inference. The account was in a certain sense provisional, since the examples it dealt with did not pretend to illustrate every kind of inference. But within those limits the result we arrived at seemed irrefragably true. The end we have before us in this Second Part, is the criticism and refutation of certain theories which are out of harmony with the conclusion we have reached.

The title of this chapter calls for explanation. "The Association of Ideas," it may be objected, "is not so much a theory as a fact; a fact which on the one hand is quite indisputable, and which on the other hand can be discrepant with no theory except a theory which runs counter to fact." But the objection would rest on an entire misunderstanding. The psychological fact of "Association" is of course unquestionable. The account of that fact which is given by the orthodox English philosophy, is in my judgment not only questionable but false. And, beside being false, it is incompatible with any tolerably accurate theory of reasoning. For the universality and identity, which we saw were necessary for every inference, do not exist in the theory of "Experience." We are offered in their stead a fictitious substitute, which does not exist and therefore can not work, and which would not work even if it existed.

§ 2. "Inseparable Association," and the "Chemistry of

Ideas," are phrases which are only too familiar to most of us. They recall a controversy which has served in some measure to obscure the questions it professed to elucidate. But the more refined developements of the Association doctrine do not immediately concern us here.* For they have no direct bearing on the theory of inference; and it is solely as it touches the subject of reasoning that we have here to do with Association. We may confine our attention to the common doctrine, as exemplified in the ordinary working of the Laws of Resemblance and Contiguity.

§ 3. The "association of ideas" is a phrase which may be taken to express a well-known psychological fact. And if taken so, it is nothing but a title. The fact, which it stands for, is a familiar experience, and the meaning of the title is not proposed as an accurate theory of that fact. It is a name which must not be pressed into a doctrine.

But, as understood by the Philosophy of Experience, the "association of ideas" has long ceased to be a way of marking a thing which we all admit has real existence. It has become the battle-cry of a school, and a metaphysical doctrine and theory of things. It contains a belief as to the nature of the mind, or at least as to the mode in which the mind works, which is irreconcileable with the views we have already adopted. Hence if "association" is to stand for a mere psychological fact, then of course, like every one else, I believe in it; and I propose to give here the explanation of that fact. But, if "association" means that view of the fact which has been embraced by a certain school, then I do not believe in it; and I propose to show that in this latter sense "association" has no real existence. It has not only been extended to take in phenomena which can not properly come within its limits, but within any limits, however narrow, it is a false view of things.

§ 4. The word Association, I suppose, implies properly some kind of *voluntary* union. That signification of course disappears, but it leaves a shade of meaning behind. For things are not associated by their own necessity, and by virtue of some internal connection. Such a group as the family, and

* We shall append some remarks at the end of this chapter.

even the state, can hardly be called associations in any strict sense. Association implies chance, that is, it depends on circumstances external to that which is conjoined. And so, when we use the term, we must be taken to suggest that, if A and B had not been associated, they would nevertheless have been A and B. For the conditions, which happened to bring them together, do not follow in fact, nor are deducible in idea, from the existence or character of mere A and B. We may perhaps explain by a reference to the hypothetical judgment. In such a judgment, if the condition is known, you assert not a conjunction but always a connection. But in a categorical judgment of perception, and that means in a hypothetical judgment where the condition is unknown, you assert a conjunction and not a connection. The former word corresponds to Association. The conjunction with B is predicated of A on the strength of a condition, that does not come into the subject, but is imported by the force of such circumstances as in their relation to A are chance.

Association thus comes to mean chance-conjunction, and in our mental history we find of course very often that ideas are conjoined by the merest accident. If you take these ideas and consider them by themselves, you can find no connection and no reason for their union. Mere circumstances, which, so far as the ideas are concerned, might never have existed, did bring them together. And a union caused by such chance-conjunction is the common meaning of Mental Association. In this sense of the term it answers to that which, I suppose, we all admit to be fact; but it conveys no theory of any kind whatever. It makes no assertion as to the nature of ideas, and it makes no assertion as to the laws of their reproduction. It calls attention to one fact among others. It does not profess to reduce well-nigh everything in the mind but sensations, impressions, or feelings, to this single fact.

§ 5. The school of Experience, in its more consistent developement, has turned the metaphorical expression of one fact into a theory which may be said to cover all. It has a doctrine as to the ultimate constituents of mind. They are particular feelings and particular ideas, in either case repellent units. And they have absolutely no internal bond of con-

nection. There is no ground common to the different units, which could serve as a real basis for their union. Universality and identity are derided as fictions. In the procession of these units we may separate two trains, the train of sensations and the train of ideas; but these all are separate individual realities. "All our distinct perceptions are distinct existences, and the mind never perceives any real connection among distinct existences" (Hume). The philosophy of Experience is psychological Atomism.

There is nothing which the atoms possess in common, and there could be no "real connection" between them. They are conjoined by the agency of chance or fate. That impressions should come to us in a certain arrangement, and should in some cases precede feebler counterparts of themselves—this springs from the unknown necessity of a nature, which we can not say is the nature of the units. And the secondary conjunction of impressions with ideas and of ideas with one another, what is this but the accident of Association, whose laws are nothing but general expressions for certain recurring kinds of irrational combination? Destiny and chance are two names of one lord that sways the procession of fleeting units. In their short-lived occupation of that void which is the soul, they are combined by the accident of presentation or by the fate of association. And the "final inexplicability" of J. S. Mill may recall an echo of the "free will" of Epikurus.

§ 6. Having thus anticipated by a sweeping theory the nature of everything that is to be experienced, the school for the future, so long as it keeps true to the metaphysical doctrine on which it stands, may call itself the Philosophy of Experience. And it is also analytical; for does it not assume that every complex phenomenon of the mind is resolvable into the units which its theory has established? Its first principles no doubt are never analyzed; but analysis, it is obvious, must be broken off somewhere. If the "analytical school" are content to stop, then the limit of human thinking has been reached. If the Philosophy of Experience is content with the result, then surely the product of analysis must be fact. Analysis in the future will consist in the attempt to

reconstruct synthetically the phenomena of the mind from elements gained in accordance with first principles, and according to the Laws which first principles have established (cf. Book III. Part I. Chap. VI. § 10). It is hardly necessary that in every case the existence of each element should be verified *a posteriori*. If, for the explanation of visual extension, it were first necessary to verify in actual observation the fact of colour-sensations devoid of all extension, it is possible that the analysis could not be performed. And, since that analysis has been firmly established, it is clear that its basis can not be unreal. If we confine ourselves to the limits and the method of the school of Experience, we may be sure of one thing; if we are true to Experience we must be true to fact.

§ 7. We can appreciate now the nature of the claim which is laid to the titles of "experience" and "analysis." But we must hasten to examine the character of those Laws which rule the void and which move ideas. They answer, in the psychical empty space, to what is called "cohesion" or "attraction" in the external void (Hume, *Treatise* I. 1. 4). The two main principles are the law of Contiguity, and the law of Similarity or Agreement.

I. "Actions, Sensations, and States of Feeling, occurring together or in close succession, tend to grow together, or cohere, in such a way that, when any one of them is afterwards presented to the mind, the others are apt to be brought up in idea." Bain, *Senses*, p. 327.

II. "*Present* Actions, Sensations, Thoughts, or Emotions tend to revive their LIKE among *previous* Impressions, or States." *Ibid.* p. 457.

Or, to put the same thing in the opposite order, "Of these laws the first is, that similar ideas tend to excite one another. The second is, that when two impressions have been frequently experienced (or even thought of) either simultaneously or in immediate succession, then whenever one of these impressions, or the idea of it, recurs, it tends to excite the idea of the other." J. S. Mill, *Logic*, II. p. 440, Ed. IX.

A briefer, and on the whole more accurate expression, would perhaps be this; Mental units which have co-existed cohere

and mental units which are like recall one another—at least in image.

§ 8. In saying that I entirely and utterly reject each one of these statements, I may be taken to deny the existence of fact. But (to repeat once more a distinction I have drawn) what I find it impossible to make myself believe is *not* the fact which these formulæ may be taken as loosely indicating. It is on the contrary their theory of that fact which I can not swallow. And I have no insurmountable objection to the *use* of such statements; but I can not for one moment allow that they are *true*.

I shall give hereafter in greater detail those reasons which lead me to believe that these laws are nothing but fictions. But the main ground of objection may be stated at once. The ideas which are recalled according to these laws are particular existences. Individual atoms are the units of association. And I should maintain, on the contrary, that in all reproduction what operates everywhere is a common identity. No particular ideas are ever associated or ever could be. What is associated is and must be always universal.

It will be found, I think, the most convenient course, if I first give some account of the way in which I conceive association is effected, and then attempt to show that the method, commonly accepted as fact, is wholly fictitious.

§ 9. In the previous Book (p. 36, foll.) I have to some extent anticipated this discussion, and, trusting that the result to which we there came may be recalled by the reader, I may perhaps be here allowed to be brief. I have no hope of persuading the orthodox believer, and others may be willing to help in working out the sketch of a doctrine.

The main Law of Reproduction may be laid down thus; Any part of a single state of mind tends, if reproduced, to re-instate the remainder; or Any element tends to reproduce those elements with which it has formed one state of mind. This may be called the law of Redintegration. For we may take this name from Sir W. Hamilton (*Reid*, p. 897), having found nothing else that we could well take.

There are several points in the formula which call for

explanation. We might ask, in the first place, What is a single state of mind? Does it exclude succession? It certainly does not do so. It may be further defined as any psychical complex which is present together, presence signifying presentation, a certain direct relation to the mind which does not imply succession in time. As I have endeavoured (p. 52) to throw some light on the meaning of this term, I must be excused from a further discussion of it here.

In the second place the "parts" of this present state need not be either perceptions or ideas. For the formula includes every possible kind of mental element; and this is the reason why we can not accept the principle as we find it laid down by Wolff and others. I will not here ask, if in the end it is not possible that association is confined to intellectual or perceptive elements (vid. Book III. I. Chap. III. §§ 20–22). It is better for ordinary purposes to suppose that it also applies to desires and feelings. But subject to this correction we may adopt, if we please, Wolff's statement of the law.

"Si quæ simul percepimus et unius perceptio denuo producatur, sive sensuum sive imaginationis vi; imaginatio producit et perceptionem alterius—seu quod perinde est—perceptio præterita integra recurrit, cujus præsens continet partem" (*Psych. Emp.* § 104).

Maas, following Wolff, has thus formulated the principle. "Given an idea or perception, then all those ideas, which belong with it to one total perceptive state, may immediately associate themselves with it, and no other ideas can do so." Or "Every idea, or perception, recalls to the mind its total perceptive context" (*Versuch*, Verb. Ausg. 1797, § 13).

This law of Redintegration, we must bear in mind, does not exclude any succession of events which comes as a whole before the mind; and it is not to be confined to perceptions and ideas.

§ 10. The law of redintegration is a very different thing from the law of contiguity, as that is understood by the school of Experience. Superficially alike, they are separated by the chasm that divides irreconcileable views of the world. For contiguity is cohesion between psychical units, and its

elements are particular existing phenomena. What it couples is the actual individual impression or image, as such. It is not association between universals. But Redintegration is not anything *else*. For it never re-instates the particular fact. It can not deal with anything that could be a phenomenon, or could ever exist. It does not couple psychical units, but is entirely confined to what is universal.

We should find it hard to overstate the enormous divergence of these two interpretations of the fact of association. Contiguity asserts a conjunction between existences. Redintegration asserts a connection between universals, which as such do not exist. What operates in the first is an external relation *between* individuals. What works in the second is an ideal identity *within* the individuals. The first deals with the *that*, and the second with the *what*. The first unites facts, and the second mere content.

According to the view which to me seems the truth, to talk of an association between psychical particulars is to utter mere nonsense. These particulars in the first place have got no permanence; their life endures for a fleeting moment. In the second place they can never have more than one life; when they are dead they are done with. There is no Hades where they wait in disconsolate exile, till Association announces resurrection and recall. When the fact is bodily buried in the past, no miracle opens the mouth of the grave and calls up to the light a perished reality, unchanged by the processes that rule in nature. These touching beliefs of a pious legend may babble in the tradition of a senile psychology, or contort themselves in the metaphysics of some frantic dogma, but philosophy must register them and sigh and pass on.

There is nothing we know which can warrant the belief that a particular fact can survive its moment, or that, when it is past, it can ever live again. We know it is true in our actual experience that reproduction presents us with particular images; but to assert that these *are* the perished originals is to demand a miracle to support our false beliefs. We have absolutely no kind of warrant in experience for our assurance, that what comes into the mind by Association is the particular

as we had it. For the particular fact is made particular by an elaborate context and a detailed content. And this is *not* the context or content which comes back. What is recalled has not only got different relations; itself is different. It has lost some features, and some clothing of its qualities, and it has acquired some new ones. If then there is a resurrection assuredly what rises must be the ghost and not the individual. And if the ghost is not content with its spiritual body, it must come with some members which are not its own. In the hurry of the moment, we have reason to suspect, that the bodies of the dead may be used as common stock.

But if we are willing to throw over our orthodox creed, we may escape with less demand on our faith. The doctrine of Redintegration does not ask us to subscribe to the belief that what is past exists over again. It offers a simpler explanation of the facts. Given any presentation X, which has a content such as . . . *a b c d e* . . . , it asserts that the oneness of this presentation is in a certain sense a connection of its content. The *fact* of the presentation absolutely disappears. What is left behind is a mental result, into the ultimate metaphysical nature of which we do not here enquire. But this result is not a phenomenon, not a particular image or relation of such images. It is an alteration of the mind, which shows itself to us as a tendency to pass from content to content. It is a connection, not between this *a* and this *b*, or this *c* and this *d*, but between the universals *a* and *b*, or *c* and *d*. It is a quality of the mind which manifests itself in the fact that, if we have one part of the content which appeared in X, then—although everything which particularized that content in X, and gave it existence, has disappeared—this bare universal *a*, *b*, *c*, or *d*, when given with a different set of particulars, may re-instate by its ideal identity any other of the universals, *a*, *b*, *c*, or *d*. It will recall it certainly in a particular clothing, but this clothing will be determined by present mental circumstances, and will not be the clothing of its past existence. And this particular clothing, again and in the second place, is not the bond which *works* in the reproduction. What works is the connection between the universals, and the basis of that working is the ideal

identity of some element in what is present and in what is past.

§ 11. I have illustrated my meaning already by anticipation (p. 37), and shall illustrate it hereafter. At present I must hasten to meet an objection. I maintain that all association is between universals, and that no other association exists. Every kind of reproduction, in my judgment, takes place by virtue of identity *plus* the connection of universals. "And do you really," there may here come a protest, "do you really believe this holds good with emotions? If castor-oil has made me sick once, so that I can not see it or even think of it without uneasiness, is this too a connection between universals?" I reply without hesitation that I believe it is so; and that I must believe this or else accept a miracle, a miracle moreover which is not in harmony with the facts it is invoked to explain. *You* believe then, I feel inclined to reply, that the actual feelings, which accompanied your vomiting, have risen from the dead in a paler form once more to trouble you. I could not credit that even if it answered to the facts. And it does not answer, since the new feeling is clearly different from the old one. The old feeling was the event it was, by its presence in a certain series of events. It had a number of accompaniments, conditions, and circumstances, which belonged to it as this feeling. The psychological environment was in great part different. Nay, if we could observe it, we should probably find that its actual internal content has varied. We should see degrees or shades of quality, which in the two cases would probably not be the same. Your miraculous supposition is therefore not even a fiction which will work.

And if you say that, by the sameness of the feeling, you mean a feeling which is the same in kind, and for all practical purposes one with the other, this is exactly the thesis which I wish to establish, and which you have objected to. The feelings of sickness are the same in the main, that is, they have an identical content, which is the same although the contexts are different. But, if so, is it not, I would ask, admitted that what is reproduced is not the particular but is the universal? The first conjunction of castor-oil and sickness

has no longer the smallest existence as fact. But it gave rise to a connection of elements in the mind, which elements are an idealized part of the content of this perished fact. The new presentation of castor-oil is a fact which is certainly not the old fact; yet it has a content which is partly the same. The presence of this identical universal supplies the antecedent to the hypothetical connection of elements in the mind, and this then passes from hypothesis into actual fact. In other words the ideal identity of this castor-oil with that castor-oil recovers ideally, and in an universal form, another element of the original context. And, so far as mere reproduction goes, nothing but the universal could ever be called up. It is the *fresh presentation* which adds detail to the reproduced element. This new perception re-particularizes the universal, and does so in a way which will not be the old way, and in many cases will be strikingly different. But such re-particularization (if the term may be allowed) is *not* association, and is *not* reproduction. For though the new particular feeling of sickness is no doubt the *result* of reproduction, yet *it* never was associated, and *it* can not have been reproduced, since it exists now for the first time. You may say that by a miracle the old feeling of sickness without detriment to its sameness has been changed *en route;* but this very change and this very difference is the denial of your doctrine, unless your doctrine too is from time to time changed by a parallel miracle.

I do not say that we should be right to reduce all reproduction to *logical* redintegration. That is a point on which I shall touch hereafter (Book III. I. Chap. III. § 20). It does not concern us here. For it is not necessary to believe that the "idea" of a feeling is a *logical* idea, and that it is a conscious or even an unconscious symbol. What must however be believed is that it is an universal. And this need give rise to not the smallest psychological difficulty. Whatever differences may separate the various kinds of psychical phenomena, they are all alike in one point. They all have content as well as existence. They are not confined to the "that," but each has a "what," since there is a complex quality and relations of quality.* And, this being so, we

* Quality at this stage covers quantity.

have all that is required for the formation of universals. For an identity of content in different contexts is and must be an universal, whether we are dealing with perceptions or feelings or volitions.

§ 12. To suppose the presence and the operation of universals in all reproduction, introduces a unity into our view of the soul. It enables us to interpret all stages of mind as the growth of one principle. We can thus accept without abridgment the very highest phenomena, and we can show their root in the lowest and rudest beginnings of the soul. We may say that experience will begin when a present perception has one part of its content identical with a past, and when this common universal re-instates another part of the original context. But that past element most certainly does not reappear in its particular form. It too is universal, and it is the connection of these universals which operates in the mind. Hence the content of the perception, which is now present, is extended by means of this ideal synthesis, and, itself individual, individualizes the result. This true account is in harmony with fact. But, on the other hand, to suppose that one or more particular feelings or images are magically recalled and adhere to the perception, is directly contrary to the plain facts of observation. For these separate particulars are palpably absent; and in order to explain their obvious absence it is necessary to invoke a Law of Obliviscence, by which their details may again be shorn off. But this Law of Obliviscence has no title to exist in the shape which is given to it, except that it is demanded by an erroneous theory (vid. inf. § 25). A miracle is first invoked to explain the facts, and then a fiction introduced to square the facts to the miracle.

But the unviolated facts support redintegration by identity. In a rudimentary soul a present sensation has *its* content increased by internal extension. There are not several facts before the mind, but there is a single fact whose content, after enlargement, consists in part of an unconscious inference. The sensation is extended by an ideal supplement, and this supplement, through union with the individual sensation, becomes for the mind individual fact. On this view there is

no psychical phenomenon which intervenes between the sensation and the resulting perception. We have not to postulate the irrelevant and conflicting detail of particular images, and have no need to rid ourselves of this palpable fiction by any arbitrary Law. Or again, if the result of the new sensation be desire or action, our theory still maintains its superiority. Let us however try to exhibit this in detail.

What is the fact to be explained? It is, I think, this. A sensation A*b* has once led to an action C*d*; and now a sensation E*b* (the same with A in respect of *b*) is presented. E*b* is then followed by an action F*d*, which in respect of *d* is identical with C*d*. Such is the fact, and we have two competing explanations. On the first and incorrect interpretation E*b* calls up a particular image of A*b*. The latter is associated with the particular idea of an action C*d*, and C*d* produces F*d*. The transition is thus, E*b*–A*b*–C*d*–F*d*; and this transition is discrete from atom to atom. This is the first interpretation. On the other, E*b* directly redintegrates *d*, and E*bd* directly produces E*bd*F. The transition may be stated as E*b*–*d*–F; but, since *b* and *d* are universals and are not psychical phenomena, the actual transition is unbroken from E to F. Now which of these explanations accords best with fact? The fact is that the supposed intermediate units, A*b* and C*d*, can not be verified in observation. Their presence is deduced *a priori*, and is not pointed out *a posteriori*. We are then asked to believe that their presence exists though we can not see it; for it is hidden by the Laws of Obliviscence. But this mysterious agency has itself been manufactured *a priori*. It again can not be verified in actual experience. Hence we have first a principle which produces something other than our fact, and then an arbitrary invention to patch up this mistake. Such is the first interpretation; and let us look at the second. On that, I will not say that nothing is asserted either more or less than what can be observed, but I will say this. Not only is one principle used throughout, and that one sufficient to explain the facts, but there is no result, and not the fraction of a phenomenon, postulated by this principle, but what can be shown *a posteriori*. And, even apart from all question of truth and falsehood, a theory

which demands two compensating hypotheses, must surely be rejected in favour of a theory, which works as well with one single hypothesis.

§ 13. But I shall be told, "This statement of the case is absurd. In the first place, and apart from truth and falsehood, the theory you advocate does not cover the facts. It fails to explain the suggestion of similars. Again and in the second place, the hypothesis you adopt is demonstrably false. And a single hypothesis is not admissible if it is insufficient, if it is not true, and if a true explanation is within our reach. I answer, In the first place, as I shall soon point out, the reduction of suggestion to redintegration is an accomplished fact. And in the second place the falsity of redintegration can not be shewn; but on the other hand what can be demonstrated is, that *your* hypothesis is false. For (i) there is no such thing as Association by Contiguity; (ii) there is no such thing as Association by Similarity. I will try to make both of these last points quite plain, and will then return to defend the true explanation.

§ 14. (i) Let us begin with Contiguity. What is the true view? The true doctrine is that, when elements have coexisted, they tend to be connected. What does this mean? It means that if (say) in a perception A the elements β and γ are conjoined, the mind gets a tendency to join one to the other whenever either reappears. But what are β and γ? They are universals. They have been detached from their original environment, and to some extent stripped of their particular qualities. They are not individual images. Thus if I have seen a black man stabbed with a sword in a certain street at a certain time and under certain conditions, what is left in the mind is not a connection between these special sensations, or between special images which are their feebler counterparts. I might shudder when I saw a white cow threatened with a butcher's knife at another time and place and under different conditions. For what is associated is not the images, it is always universals or types, which as such have no real existence, even in the mind. This is the true view. We will pass to the consideration of the erroneous doctrine.

There is not much doubt, I think, what that doctrine really is. But its adherents allow themselves a looseness of statement which is sometimes excessive; and we hardly know the point at which their mythology becomes conscious. We are at times led to think that past perceptions continue to exist, and on occasion rise to be seen of men. For observe the definition.

"Actions, Sensations, and States of Feeling, occurring together or in close succession, tend to grow together, or cohere, in such a way that, when any one of them is afterwards presented to the mind, the others are apt to be brought up in idea." "When two impressions have been frequently experienced (or even thought of) either simultaneously or in immediate succession, then whenever one of these impressions, or the idea of it, recurs, it tends to excite the idea of the other."

A definition is not the place where one looks for fancy, but for actual belief. But consider these phrases, "*when any one of them is afterwards presented*," "*whenever one of these impressions recurs*." Are they feasible unless the writer believes in the coarsest form of subterranean existence and of the Resurrection of the body? But neither of the writers professes to hold that belief. They both repudiate it. And yet that does not prevent both of them from speaking as if they accepted it in full, and at least one of them from reasoning on the assumption of its truth.*

§ 15. This point perhaps may be dismissed as a mere question of statement; for there is no doubt that our authors would stoutly deny that the past impression is recalled to life. "Whenever one of these impressions, or the idea of it, recurs" are words that must be used in a popular sense. Then what is the exact sense? Are we to amend the formula by writing simply, "whenever the idea of one of these impressions recurs"?

Even so we are still in the land of mythology. The "ideas" that are meant are particular existences. The fleeting impressions in their passage through the void throw off feebler counterparts, shed pale doubles of themselves.

* I refer to J. S. Mill. See his *Hamilton*, Chap. XI. and Appendix.

And the idea, like the impression, is a particular unit, it is no universal but an actual phenomenon. It certainly is called "the idea *of* the impression," but this phrase does not mean that the two have any substantial identity. It means that one follows the other in time, and in fainter traces shows a similar detail. But if this is what is meant, it is not what is said.

"*Whenever*," we are told, "*the idea of it recurs*." But the idea, like the impression, exists only for a moment. Then how can it "recur" unless it is the same; and how can it be the same unless it has remained? We may figure to ourselves the faithful ghost, haunting the place where the body is not, and called up to the light by the spell of Association. But we surely must know that these pious legends are not literally true. For the image, like the sensation, endures but for a moment. And if the impression does not "recur," then the idea does not "recur;" since in this respect there is no difference between them.

It is mere mythology to talk of the copy, which the impression has sloughed off, persisting in the world and preserving its identity through the flux of change. The word *recurs* must be struck out of the formula. There are a train of images, there is not one image. And with this fable must depart another loose phrase. We have no right to call a broken procession of several images, "*the idea* of an impression." We must call them "different ideas of the impression." And here, I think, we are approaching danger. For we naturally consider that, in a case of association, there is some one connection throughout all the instances. We can hardly help believing, and talking as if we believed, that when (as we should like to say) something "recurs," then something else "recurs" also. But we must strip off this illusion, or wear it only when we come before the public. There is *nothing* that recurs. The original impression is one mental unit, the first idea is another, the second idea is a third passing atom, and so on for ever. There is no real bond which unites them together. There is no common internal identity, which is the same in all and recurs amid change. If we call them "the ideas of one impression," even this is mere fable. We have a *likeness* no doubt, in all

these cases. A hundred images, or more it may be, with all their differences and all their particularity, are yet each of them particular in such a way that they are all like each other, and all like the impression. This is startling, I admit, but even this does not warrant us in considering any one to be the *same* as the other, and united by holding the one substance of their prototype. If we desire a legend which perhaps may be harmless, we may call them all "ideas *of* the impression" in the sense that, like Abraham, the impression while it lived had them all in its loins. For no vehicle conveys the eternal verities half so well as does the labyrinth of a fantastic genealogy, with its one-sided begettings and abnormal parturition.

§ 16. "Whenever one of these impressions, or the idea of it, recurs, it tends to excite the idea of the other." This is what we started from. What are we left with? "Impressions" is gone: "recurs" is gone: "idea *of* it" is gone. It seems that we must thus amend our formula, "Whenever an idea like one of these impressions occurs, it tends to excite the idea of the other." This surely will stand: this at last must be true. Unfortunately not so; for it still says too much and must be further cut down; and yet already it has begun to say too little, and will now no longer cover the facts. But I will at present keep to the too much. The phrase "to excite *the* idea *of* the other" must at once be corrected. It should run "to excite *an* idea *like* the other." And we must further amend the beginning of our formula. For "when two impressions have been frequently experienced" is quite mythological. *If* two impressions *were* "frequently experienced," they would be *two* no longer. The phrase is nonsensical, unless several experiences are one experience: and that we know is not true. We must alter this also, and in our final correction the law must be stated.

"When we have experienced (or even thought of) several pairs of impressions (simultaneous or successive), which pairs of impressions are like one another; then whenever an idea occurs which is like all the impressions on one side of these pairs, it tends to excite an idea which is like all the impressions on the other side."

This I believe to be the meaning of Association by Contiguity.

And at this point perhaps it may occur to us to ask, what is it that is contiguous, and what is it that is associated? The impressions are not *associated;* I presume that is obvious. They are conjoined in presentation, just like anything else we perceive together is conjoined. It is the ideas which are associated, since one, as we see, can bring up another. But then in what sense are the ideas *contiguous?* They are now successive, or simultaneous, *because of* the contiguity. Contiguity conjoins them, and it would be nonsense to say that they become conjoined because already they *are* contiguous. For if they *are* contiguous, then both must be there, and how can one call in the other? And if they are *not* contiguous, then it is not *their* contiguity which brings them together. This consideration seems to me quite palpable; but the result is fatal to the Law of Contiguity.

The law operates by means of and through contiguity, and therefore presupposes it. But there is no contiguity save that of the impressions. It must be then the contiguity of the impressions which works. Because they *were* together once, the ideas *come* together now. But, if so, what becomes of the association? For the impressions are not associated, and the association is, if anywhere, between a present and an absent idea. What is associated was therefore not contiguous, and what was contiguous is now not associated. Association and contiguity fall hopelessly asunder; and hence let our law be never so real, it can not be the Law of Association by Contiguity. In short, the whole thing comes to this. If impressions *have been* contiguous, then ideas which are like them now tend to excite one another. And for myself, I can not see how in any intelligible sense this is the *association* of ideas.

§ 17. And now (to come to the other side of the failure) if we state the law in this corrected form, it will not cover the facts of the case. For commonly an *impression* is what is first given, and then this *impression* calls up an *idea.* Thus if one fire has already been felt to be hot, then, if another fire is *seen,* the *idea* heat comes. Thus an idea is excited by what is not an idea, and by what never has been contiguous to anything. We must once more and finally thus amend our formula, "If any mental units have been contiguous, then any others

which resemble them may excite one another." There is not left here a vestige of *association*. And the union of the elements somehow takes place by virtue of the past contiguity of something else.

§ 18. Association by contiguity may be taken as exploded. But the philosophy of Experience is, to some extent at least, prepared for this result. It will admit so much, that *mere* contiguity will not work by itself. And it proposes to support it by another agent. There is no such thing, it is ready to allow, as association by *bare* contiguity. All reproduction in a certain sense depends on similarity.

"There never could have been association by contiguity without a previous association by resemblance. Why does a sensation received this instant remind me of sensations which I formerly had (as we commonly say), along with it? I never had them along with this very sensation. I never had this sensation until now, and can never have it again. I had the former sensations in conjunction not with it, but with a sensation exactly like it. And my present sensation could not remind me of those former sensations unlike itself, unless by first reminding me of the sensation like itself, which really did co-exist with them. There is thus a law of association anterior to, and presupposed by, the law of contiguity: namely, that a sensation tends to recall what is called the idea of itself, that is, the remembrance of a sensation like itself, if such has previously been experienced." "There is, therefore, a suggestion by resemblance—a calling up of the idea of a past sensation by a present sensation like it—which not only does not depend on association by contiguity, but is itself the foundation which association by contiguity requires for its support." J. S. Mill, *on James Mill*, I. 112, 113.

"There can be no contiguity without similarity, and no similarity without contiguity. When, looking at a river, we pronounce its name, we are properly said to exemplify contiguity; the river and the name by frequent association are so united that each recalls the other. But mark the steps of the recall. What is strictly present to our view is the impression made by the river while we gaze on it. It is necessary that this impression should, by virtue of similarity

or identity, re-instate the previous impression of the river, to which the previous impression of the name was contiguous. If one could suppose failure in the re-instatement of the former idea of the river, under the new presentation, there would be no opportunity given to the contiguous bond to come into operation." Bain, *ibid.* p. 121.

Let us try to understand this amended doctrine. In the first place we must remember that, when *identity* is spoken of, it is not really *meant*. What *is* meant is more or less of similarity. And this point must not be lost sight of.

In the second place I must be allowed to complain of a serious inaccuracy in the extract I have quoted from Professor Bain. It surely is nonsense to talk of "re-instating the previous impression," and I must add that in this context the nonsense seems inexcusable. And again in the first of the extracts there is ambiguity. The "remembrance of a sensation," we must clearly understand, does not revive the sensation itself, and does not establish any actual relation with that mental unit which no longer exists. If this is not so, and if a psychical phenomenon can maintain or recover its existence and identity through the flux of events, then the whole theory from which the school of Association starts has been tacitly thrown over.

But, if an impression when past is done with, if it is really non-existent, then not only can it not be re-instated bodily, but *itself* can not even be re-instated in idea. The fact which is covered by the delusive phrase "idea of it," is merely the fact that a sensation came first, and then subsequently there came a paler counterpart. And, when we once discern this fact through the mist of ambiguous and misleading formulæ, there is an end to the theory which hides or obscures it.

What *was* contiguous is now non-existent, and what is "re-instated" has *never* been contiguous. Let us look at the facts. A sensation A excites by similarity an image *b*, and, on this, contiguity has to do all the rest. But has *b* ever been contiguous to anything? In the case before us there are two possibilities. The fact from which we start is this—we *have had* an impression B along with an impression C, and we *have* an impression A. Now what are the two possibilities?

In the first place it is possible that *we never have had a feeble image resembling* B. And this is more than possible, for in an early mind it is also probable. But in this case, when A excites an image b, there is absolutely no contiguity of anything with anything. Not one of the supposed elements in our reproduction has ever been contiguous with any other; and, this being so, reproduction will not take place. This first possibility appears to me to have been overlooked. Let us now pass to the second. We here have had the contiguous impressions B – C. These we suppose to have been followed by one or more pale pairs of images $b^1 - c^1$, $b^2 - c^2$, $b^3 - c^3$. These are all like each other, but they all are realities each of which is not the same as any other. We now experience a sensation A. This also is *like* the previous sensation we have called B, and is *like* the images b^1, b^2, b^3. But every one of these, I must beg the reader to remember, is by this time absolutely non-existent. What then is to happen when A is presented? It calls up by similarity an image b^4. But this is not what we want. For we want an image $b^4 - c^4$; and *contiguity* is invoked to present us with c^4. But is invoked in vain. For as yet c^4 has never existed, and *ex hypothesi* it is to be *made* to exist by means of contiguity. On the other hand b^4 has never been contiguous to anything at all. We have reached once again the old result. There is no association by contiguity. What is called up by association has never been contiguous; and what has been contiguous can not be called up. The contiguity which now operates is a *past* contiguity, which is not recalled and can not be recalled, but which, according to the pious legend, is somehow passed on like original sin.

But if this is so, then Association by Contiguity is exploded finally. No exciting of similars will save it from annihilation. For the similars excited have not been contiguous, and what was really contiguous can not be excited. If present sensations are qualified by images in the way described, still on that (false) hypothesis there is no reproduction by *association*. There can be no association where the elements are not co-existing associates. But if they do already co-exist and thus *are* associated, then how in the name

of all that is miraculous can one bring about the co-existence of the other, and by means of their co-existence?

§ 19. If the school of Experience is in earnest with its principles there can be no such thing as Association. But is it in earnest? Notwithstanding all its public protestations may it not secretly look for the Resurrection of the Body? Does not the charm of Similarity shake the realm of Hades, and conjure from its grave the reluctant past? Is anything too hard for Association? Its spell has prevailed over the mind of its votaries, and, though their lips may deny, yet Association itself has helped their unbelief by its own divine power. They *do* believe in the miracle of resurrection. But they believe blindly and unconsciously, compelled by the strength of a tacit conjunction of meaning with phrase.

We saw that, by the admission of its advanced disciples, association depends upon similarity. If there is no reproduction by Similarity, it is admitted that there is no Association at all. I shall now press this consequence. If you do not believe in this kind of Association, you believe in none. But if you do believe in it you believe in a miracle which upsets all law. And furthermore there is no evidence *a posteriori* to confirm this miracle. In plain words Association by Similarity is a downright fiction. It is not called for by the facts; and it involves besides metaphysical assumptions which I confess stagger me, and which I think may somewhat surprise others. I shall show the reader how the school of Experience has swallowed the most outrageous metaphysical doctrines, and that he must follow their example or leave their company.

§ 20. (ii) Association by similarity, if it is anything at all, is a means of exciting ideas that are not present. If it will not give us what at present, and apart from its agency, we are without, then it surely is a self-condemned *fiasco*, that is not worth discussing. We may perhaps agree that an agency which recalls and yet recalls not anything but what is already on the spot, is something like a piece of nonsense. And I propose to show that Association by Similarity *is* this piece of nonsense.

Similarity is a relation. But it is a relation which, strictly

speaking, does not exist unless both terms are before the mind. Things may perhaps be the *same* in certain points although no one sees them; but they can not properly *resemble* one another, unless they convey the impression of resemblance; and they can not convey it unless they are both before the mind. This is not merely an assertion I have chosen to make. Let us see what is told us by J. S. Mill.

"Any objects, whether physical or mental, are related, or are in a relation, to one another, in virtue of any complex state of consciousness into which they both enter" (*on James Mill*, II. 10).

"Likeness and unlikeness are themselves only a matter of feeling: and that when we have two feelings, the feeling of their likeness or unlikeness is inextricably interwoven with the fact of having the feelings. One of the conditions, under which we have feelings, is that they are like and unlike: and in the case of simple feelings, we can not separate the likeness or unlikeness from the feelings themselves. It is by no means certain, however, that when we have two feelings in immediate succession, the feeling of their likeness is not a third feeling which follows instead of being involved in the two" (*ibid.* p. 18).

"I have two sensations; we will suppose them to be simple ones; two sensations of white, or one sensation of white and another of black. I call the first two sensations *like;* the last two *unlike.* What is the fact or phenomenon constituting the *fundamentum* of this relation? The two sensations first, and then what we call a feeling of resemblance, or of want of resemblance. Let us confine ourselves to the former case. Resemblance is evidently a feeling; a state of the consciousness of the observer" (*Logic*, I. 75).

Is not this quite plain? Does it leave any doubt? Is it not clear that two mental elements are not like, unless I have them before me at once or in immediate succession? But, if so, what meaning can we attach to the calling up of an idea by similarity? If the relation does not exist until the idea is called up, how can the idea be called up by the relation? Is it not, the moment we look below the surface, mere verbiage and nonsense?

§ 21. In the first place what is called up is absolutely non-existent. We are told, not once but again and again, that a feeling gone is gone for ever. And the same thing holds of particular images. If these exist, then the past exists, and the procession in the mind is not real but illusory. Are we to believe this, and believe it in the teeth of our asseverations? But if we can not believe it, and if the past does not exist, then we must believe in a relation between the existent and the non-existent; and believe that the whole (relation and relateds) is one state of our minds. If, on the other hand, the past can exist, this miracle will not save us from annihilation. In the relation of similarity both terms must be present, and the fact that one *calls up* the other by this relation, postulates that one of the terms must be absent. It is therefore both present and absent at once. On either hypothesis we are landed in contradictions; and I have redeemed the promise I gave to the reader. An idea is absent and at the same time present. It is not there and so is brought in by a relation, which relation is nothing if the idea is not there. And a union, which is impossible out of the mind, persists between the existent and what is wholly non-existent. Could anything be more insane than this wild metaphysic?

§ 22. But I shall be told "You are deceiving us; it is incredible, it is impossible that our sober countrymen can have been so imposed upon." I answer, That question is easily settled. It is admitted that by "association" they must mean something, and what *else* do they mean?

The Experience Philosophy has to meet two objections. It has to explain how the non-existent can be related to the existent. And when it has done that, it must explain how the absent can be recalled by the present, when similarity implies common presence and reproduction excludes it. Suppose that the former difficulty has been slurred over by some metaphysical formula of "the potential and the actual," or some distinction between *my* mind and *other* minds, yet the second remains. Suppose that your past series somehow exists, yet how, I ask, are you going to get at it? Mere partial identity of the present and the past would not be

what you want, since this would not be an actual relation *in your mind.*

This is what Maas meant by the following objection. "The mere similarity of two ideas (or sensations) can not possibly be a cause of their association. For similarity is an objective relation of the ideas themselves; while association is a subjective connection in the imagination. But the latter does not follow from the former, nor tend to follow from it" (*Versuch*, p. 55). By "similarity" Maas of course here meant "partial identity," and his argument is quite simple. The question is, Why does *my* mind go from one element to another? If you say, it goes because the elements *seem like to it*—that supposes both to be there. But if you say, it goes because they *are like apart from it*—then it goes by a miracle, for it is influenced by something which to it is nothing. Sir. W. Hamilton (*Reid*, p. 914) has replied to this argument by a criticism which shows that he did not understand it.

The Experience Philosophy may have a reply to these objections, but I confess I can not anticipate its answer. Perhaps it may fall back on a simpler view. It may say, after Wundt (*Phys. Psych.* 788), "every perception or idea tends to call into consciousness another like itself." As to the *truth* of this expression I shall have something to say afterwards. But at present I say this. Whatever else it is, it is giving up Association and throwing it overboard. For it is the mere statement of a phenomenon; and it is *not* an explanation. The entirest belief in the truth of this formula is compatible with the entirest disbelief in the doctrine of Association. We might explain the alleged fact that, given any one element, another like it may come up, by a theory of the spontaneous fission or gemmation of ideas; and this in my opinion would be a theory which, by the side of Association, is sober and rational. We might explain it again by a physiological disposition to a certain cerebral function, which (given the stimulus of a new perception or idea) passes into fact. And against this explanation I will not say one word. I will insist only on this, that *it is not a psychological explanation at all*, and that in the hands of those who know their own business it is not offered as such. If this is the only

possible explanation, then a psychological explanation is relinquished as impossible, and the Laws of Association as commonly given will not explain anything. Thus the Philosophy of Experience must take its choice. It must either rehabilitate its barbarous mythology, or admit that, though the fact of reproduction is known, it has no psychological explanation to offer, and is confessedly bankrupt. It has rested its all on reproduction by similarity, and we have shown that this is an impossibility.

§ 23. But our proof no doubt will not cause much disquiet. I shall be told "You can not demonstrate away the facts." And I will therefore proceed to my second contention. The explanation offered is not only impossible, but it is also uncalled for. There is no evidence, for it *a posteriori*. The facts of reproduction are much better explained on another theory. We have seen this already in our first Book, but I will exhibit it once more.

Let us take a fairly simple instance of reproduction. A young child, or one of the lower animals, is given on Monday a round piece of sugar, eats it and finds it sweet. On Tuesday it sees a square piece of sugar, and proceeds to eat it. In this we have of course volitional phenomena as well as intellectual, but perhaps we may simplify the case so as to make it serve.

Now on the Association theory how is the fact interpreted? I suppose in some way like this. The presentation to the eye of Tuesday's piece calls up by *similarity* the idea of Monday's piece. That is a feeble counterpart of the original sensation, and it calls up by *contiguity* feeble counterparts of Monday's felt movements and Monday's following sweet taste. The fact which ensues is hence the mental presence of Tuesday's perceived square piece, felt to be like another paler imagined round piece, with which latter a whole set of other images come in. Now the conclusion, at which we have to arrive, is the qualification of Tuesday's piece by these images which are attendant on the idea of Monday's piece; and at first sight there seems no way to this result. For the conclusion is not merely a vicious inference, but it does not even look like a probable mistake. Tuesday's sensation and

Monday's image are not only separate facts which, because alike, are therefore *not* the same; but they differ perceptibly both in quality and environment. What is to lead the mind to take one for the other?

Sudden at this crisis, and in pity at distress, there leaves the heaven with rapid wing a goddess Primitive Credulity. Breathing in the ear of the bewildered infant she whispers, The thing which has happened once will happen once more. Sugar was sweet, and sugar will be sweet. And Primitive Credulity is accepted forthwith as the mistress of our life. She leads our steps on the path of experience, until her fallacies, which can not always be pleasant, at length become suspect. We wake up indignant at the kindly fraud by which the goddess so long has deceived us. So she shakes her wings, and flying to the stars, where there are no philosophers, leaves us here to the guidance of—I can not think what.

The school has not yet accepted this legend, and I narrate partly because I am not sure that it is not relevant, but mainly because it has always seemed to me perhaps the most striking of all those creations which we owe to the imagination of Professor Bain (*Emots.* p. 511 and foll.).

§ 24. The less poetical but not less fabulous view would appear to be this. Given a perception A together with an image *b*, which resembles it and has a train of attendant images *c*, *d*, and *e*—the problem is how to transfer to A the content of *e*. And what accomplishes the feat is the Law of Obliviscence. This powerful agent obscures everything in the train between A and *e*; and it also obscures any part of *e* which is not suitable to A. The residue of *e* then adheres to A; that is, I think, the two run into one. And so we get the conclusion "This piece of sugar is sweet," by a process which logically may seem rather vicious, but which appears none the less to be the essence of reasoning.*

I can not say if this statement of the Association doctrine

* In the lowest stages of mind this theoretical conclusion of course would not appear. There would be action or attempt without anything like a judgment. The principle however would be exactly the same; and when the theoretical conclusion comes, it must come in this way.

is fair, but I hope it may be so. Let us see what objection we can find to its process.

The main objection is that there is a great deal too much of it. It is much too elaborate for simple phenomena. It first introduces a complication which does not exist; and then, having invented this complication, it removes it by a process which is not real.

It is obviously no fact which we can discover by observation, that when Tuesday's sugar is presented to sense, a similar piece or similar pieces come up, in their particularity and with all their differences, before the mind. No one gets such a fact from observation. It is in short a theoretical fiction. I do admit that afterwards, when memory is developing, there is something which can give ground for a mistake of this kind. But then of course reproduction must come before memory, and in the present case we are not concerned with the latter (cf. p. 38). The *fact* before the mind is that *this* sugar suggests both sweetness and eating without any images of any other pieces of sugar at all. In the first Book I enlarged on this point by anticipation, and, I confess, it seems to me quite plain.

§ 25. But I shall be told, that although we can not be aware of them, these images exist, and they are removed or adapted by the Laws of Obliviscence. But this process strikes me as another fiction, piled up to support the first fiction against the pressure of experience. I will quote a passage from J. S. Mill.

"The reader . . . is now . . . familiar with the . . . fact, . . . that when, through the frequent repetition of a series of sensations, the corresponding train of ideas rushes through the mind with extreme rapidity, some of the links are apt to disappear from consciousness as completely as if they had never formed part of the series. It has been a subject of dispute among philosophers which of three things takes place in this case. Do the lost ideas pass through the mind without consciousness? Do they pass consciously through the mind and are they then instantly forgotten? Or do they never come into the mind at all, being, as it were, overleaped and pressed out by the rush of the subsequent ideas?" (*on James Mill*, I. 106).

The question opened in the above quotation may be stated thus: Given an indirect connection of ideas in the mind, to find the way in which it becomes direct. I do not wish here to enter into this general question. But I must point out that Mr. Mill has raised it in a form which precludes any satisfactory solution. For the ideas connected are not really a mere series of particular images, and the fact has thus been perverted beforehand. And if we suppose that, in some exceptional case, we have got a mere train of individual images, then not one of the "three things" could possibly be operative. For so long as the ideas remained these mere images, no connection at all would be established between them. We may be sure that, whatever in the end may be the detail of the psychological process, one side of it would consist in turning these images into universals. And for this reason the Laws of Obliviscence, as we have them stated by Mr. Mill, are fictitious processes. Even if you start with a complication and a train of ideas, yet they can not deal with it.

But the point on which I desire to insist, is that in an elementary case of reproduction, such as we are now considering, the complication presupposed by these Laws has no existence at all. The *data* from which they start are pure inventions, and it is hence an impossibility that any one of the suggested "three things" should happen. The fact which Obliviscence postulates is this: A is the sugar calling up by similarity an image of sugar *b*; and *b* calls up by contiguity an image of movement *c*; and *c* calls up an image *d* of a particular sweet taste. But this fact does not exist, and the alleged process stands therefore on unreality.

There is in the first place no reason to suppose that this train of ideas, which is presumed to rush through the mind, is a counterpart of the original perception and action. What ground can we have for an assumption that the particular images, *b*, *c*, and *d*, are like in all their detail to any train of impressions we ever have had? Admit the train, what reason have you to affirm that there is anything more than a *general* likeness? What ground have you for the assertion that, if you could look into the past, you would see a train of

impressions B, C, and D, of which these present images are *copies?* Why must *d* be an "exact likeness" of the particular pleasant eating D? These dogmas seem to me to be nothing but postulates. The fact, so far as I observe it, shows me that, without respect for the past, such images vary freely within a certain limit, and that this limit is fixed by the universal connection which appears in all of them. But, if so, then what is associated is not particular images. The universal which has been deposited is the active principle, and the particular images as such are quite inert.

And in the second place the alleged process imports another gross fiction into the *data.* It tells us that similarity calls up an image *b*, which is a copy of Monday's piece of sugar. We have just seen that, if present, the image need be no copy: and now we go further. For in our elementary case the image *b* has no existence. I repeat once more that it is a pure invention, necessary for the theory but absent from the fact. When Tuesday's piece of sugar is present, the attributes of whiteness and crystalline appearance reproduce the ideas of movement and sweet taste, without any such link as another and different piece of sugar. It is not merely that we can not find such an image *now.* We never could have found it. It never has been there. And we need not ask at length if the Laws of Obliviscence could serve to obscure it, unless some evidence is produced to show that it is more than a mere chimæra.

And, as we have seen, it is a chimæra that will not work. For when you have got your image of Monday's sugar, you are left precisely where you were before. You have got an element which has just been born, and which therefore can never have been contiguous to anything in its life. And if you say "But it resembles what *was* contiguous;" then this is not only to desert your principles, but it also tends to expose you to ridicule. If you want what *is* the former piece of sugar, you can not get it. But if you want what is *like* the former piece, then you have it already *in the present perception.*

Your fictions do not help you, and why should you cherish them? Why invent the existence of similar images which

lure the unwary to vicious inferences? Why suppose that "trains of ideas," of which the mind knows nothing, float across it in procession, and then go on to manufacture a Law of Obliviscence which ties a bandage over its eyes? Because, if you do not, you are forced to admit that the mind does not go always from particulars to particulars, that indeed it never can go from particulars direct to particulars, that in short the Experience psychology is exploded.

§ 26. Let us give once more the natural interpretation of the simple fact. The natural view is that Monday's experience remains in the mind, not in the shape of particular images, but as a connection between elements of content. This is a result which in its metaphysical nature we can not here characterize, but, in its appearance to us, it is easy to describe. It is a tendency to pass from one universal to another, whenever the first of these is presented in an actual perception or image. In the instance we are examining, the shape, the size, the person giving, the where, the when, and the how have all gone. Nothing is left but a tendency to pass from element to element, from whiteness and crystalline appearance and hardness to eating and sweetness.

Monday's experience, let us say, has established the connection "white-eaten-sweet." On Tuesday "white" is given, and so we have "this-white." We advance by means of an elementary synthesis to "this-white-eaten-sweet," and, ignoring that part which does not interest us, we get "this-eaten-sweet," or, elliptically, "this-sweet." I grant you the "sweet" is now fully particular, but its particularity has had nothing to do with its recall. On the contrary its detail depends upon the context which has recalled it. And there is no particular image of "white" at all; for the universal "white" is what has worked, and that of course was given in the present perception.

Where is Similarity here? It does not exist. Similarity implies the feeling of diversity, and here the difference of particulars never comes before the mind; it is in no sense present.

Let us give up Similarity + Contiguity + Obliviscence or Primitive Credulity. Let us postulate Identity + Con-

tiguity, and then all is easy. But there are two things we must remember. The contiguity is a connection of universals, and is therefore not the contiguity of the Association school. And the identity is not present to the mind. The mind, if you keep to simple cases, knows nothing of any difference. It goes straight from what is given to an additional fact.

§ 27. Let us state our view as a working hypothesis, something that need not be true or even possible. Let it be granted there is a mind X with certain functions; let it be granted that X may be stimulated to perform again any function which it ever has performed; let it be granted that in every function there is a connection of elements, as *a–b*; let it be granted that presence of *a* tends to excite X to perform again the function which contains *a–b*; then let *a* be given in a fresh context, as C*a*. On this X is stimulated to go on to *b* thus, C*a–b*; and the product C*ab* now comes before the mind—which is the fact to be explained. If this explanation is false, admit at least that it is simple.

We are asked to believe it is more in accordance with "experience" to say, Similarity is a *tertium quid* ensuing only on the presence of a pair of elements, *and*, when but one is present, Similarity brings the other. It is "science" when we asseverate that mental phenomena are realities which can exist only while they are perceived, and then speak of "recalling" them, as if they were ambassadors on foreign employment, or "calling them up" as though they were servants in the kitchen, and as if "relations" were wires that rang the bell, or were fishing-lines baited with similarity to draw up from non-existence the ghosts of the past. It is "positive knowledge" to make that come before the mind which does not come before the mind, and then to remove it by a fictitious expedient. Yes, sooner than run the risk of believing in metaphysics, there is no superstition so gross, no mythology so preposterous that we ought not to believe in it, and believe anything sooner than cease to believe in it.

§ 28. But what is it that forces us to these desperate shifts? Not the facts themselves, for we violate them. It is simply the shrinking, as we think, from metaphysics. And

this, after all, *is* nothing but metaphysics. It is our unreasoning fidelity to a metaphysical dogma which has driven us to adopt these embarrassing results. For why is it we are so sure that identity is impossible, and that a synthesis of universals is a "survival" of superstitions, which in the nineteenth century are out of date? It is because we are sure that there can be no reality but particular existences, and no mental connection but a relation of these units; and that hence identity is not possible. But this is of course a metaphysical view, and, what is more, it is nothing but a dogma. The Philosophers of Experience have, so far as I know, never offered any proof of it; they have heard it from their fathers, and their fathers had heard it. It is held true because of the continuity of tradition in a Church, which must have truth, since it has never failed to preserve its continuity. Has the school ever tried to support it by any mere rational considerations?

So far as I know, it has been assumed that, if you are not able to swallow down this dogma, you are forced to accept an intolerable alternative. You are given a choice between naked universals, existing as such, and bare particulars. You can not stomach the first, and so you take the last. But why should you take either? Why not adopt the view that the real is the concrete individual, and that the bare particular and abstract universal are distinctions within it, which, apart from it, are only two forms of one fiction? You say, This is unintelligible. But perhaps you never heard of it, or heard of it too late, when you were already compromised, and had no inclination to begin life again. Let it then be unintelligible; but permit me to add that the view you have adopted calls for something stronger, to back it against facts, than an *a priori* deduction from a metaphysical alternative.

§ 29. We have shown so far that, in the extension of our experience, there is a synthetic construction by virtue of identity, and that association by similarity has no part in it. We have shown that the test which we bring to inferences, in order to examine their validity, is also the principle which operates in all extension of experience. On our view the origin of the fact is explained, and its existence is at the

same time justified. But, on the fashionable theory of Association, early inferences are made by what afterwards we find to be the essence of *bad* reasoning. And, to explain the origin of this unjustifiable fact, open fictions have had to be invented.

But not only is Association by Similarity a fictitious account of the reasoning process. It is a fiction altogether; there is no evidence for it at all. And it is to the final proof of this point that we must now address ourselves.

Our previous objections have raised at least a presumption against the alleged phenomenon. Let us now ask, Is there any evidence of any kind which tends to confirm it? I know of none whatever.

We are told (J. S. Mill, *Hamilton*, p. 315, note) that the elementary case of the suggestion of similars will not come under the head of redintegration. But the answer to this is very simple. Reproduction by mere similarity is a fact which, *if real*, would certainly stand by itself. Who doubts it? But then the existence of this fact is just what we deny. The general fact that ideas and perceptions give rise to others which are like them, is of course admitted. But this not only *can be* reduced to redintegration, but long ago it *has been* so reduced. I will exhibit this in a concrete instance.

§ 30. I am walking on the shore in England and see a promontory A, and then suddenly I have the idea of another promontory B which is in Wales, and I say How like is A to B. This is the fact which is to be explained. The false theory tells us to explain the fact by postulating a direct connection between A and the idea of B, for it says The suggestion is perfectly simple. But in the first place the postulate demands an absurdity, and in the second place the suggestion is certainly not simple. If instead of asserting we are willing to analyze, we soon find the true explanation of the fact.

The content of A, *like the content of every other perception*, is complex, and has several elements. Let us say that it has an element of *form* which is *p*. Now let us look at B, the idea which is to come up. That also possesses a complex content, and we find in it the same element *p*, in connection

with others, *q*, *r*, *s*, *t*. These are the conditions, and let us see what follows.

In the first place A is presented, and so presents *p*, which by redintegration stimulates the mind X to produce *qr*. What happens then?

Several things *may* happen, and it is exceedingly difficult to work out the minute psychological conditions which settle the result. But this is a question with which we are not here concerned. One result would be the identification of *qr* with A*p*. A would then be qualified as A*pqr*, and this would be an unconscious inference. In the present case we are to suppose that this can not happen; for we suppose that *q*, *r* (say a certain colour and a certain size) are discrepant with A. What then may we expect? We might expect that *qr* would be simply dropped. It might not catch the attention, and the mind might be arrested by a new sensation. We might expect again that, if *qr* is not dropped, it might be used as a means for a wandering course through a train of ideas, foreign to both A and B, and which might take us anywhere. But we are to assume that none of these possibilities become real; and that instead the idea B rises in the mind. How do we explain this?

Very simply. We remember B had a content *pqrst*, and now we have A which has brought in *p*, and so introduced *qr*. But *qr* will not coalesce with A. Let them then instead go on to complete the synthesis *pqrst*, a synthesis which by its discrepancy with A is freed from union with it. But an independent *pqrst* is B, and may be recognized as B. And now, B being there along with A, the perception of its resemblance calls for no special explanation. This account of the matter appears to me simple and natural and true.

§ 31. It may be objected, in the first place, that, if the sensation is simple, this theory will not work. I admit it, and I should be sorry if in such a case it *did* work. I would rather that any theory, which I adopt, did *not* explain impossibilities. And that any actual presentation should be simple is quite impossible. Even if it had no internal characters, yet it must be qualified by the relations of its

environment. And this complexity would be quite enough for the purpose. For the identity of the simple internal character, over against the difference of two sets of external relations, would give rise to redintegration and to the perception of the resemblance. I think a sober antagonist will hardly deny this. And if it should be denied, then I am inclined to reply with a *reductio ad absurdum*. If the suggestion is quite simple, perhaps there is *no* difference between the similars, or perhaps they are *quite* different. But on either alternative they can not be *similar;* and again, if neither alternative is true, then the suggestion is now admitted *not* to be simple, because the elements have a complex content.

I can think of another case where mistake is possible, and where suggestion might seem to dispense with redintegration. If an idea before the mind is unsteady and wavering, it tends to pass into something different. This difference may be recognized, and may appear as an idea, which is not the first idea, and yet is seen to resemble it. But the unsteadiness will in no case be reproduction by similarity. If the new idea, which is similar to the other, is produced by a change in the actual impressions, then this of course is not reproduction at all. But if the alteration takes place apart from the stimulus of a fresh sensation, it will still be a case of redintegration. For that will be the principle which determines the *direction* of the idea's unsteadiness.

We must pass next to an objection which I feel bound to notice, though I confess I am not able to understand it. We are told that the form, say of a triangle, is not one single feature among others, which therefore could call up the other features; and that yet a triangle may call up another which is similar in nothing but form (J. S. Mill, *on James Mill*, I. 113). But *why* the form of a figure is not to be a "feature" of it we are not told, and I at least can not imagine. I was glad to find when, after forgetting this passage, I came on it again, that accidentally (§ 30) I had chosen to work out an instance where the form is the base of the redintegration. And I will say no more.

And there is another misunderstanding which we may

remove in conclusion. After pointing out that "in the very heart of Similarity is an indispensable bond of Contiguity; showing that it is not possible for either process to be accomplished in separation from the other," Professor Bain, if I understand him rightly, goes on to argue that, notwithstanding this, at least a partial reproduction by pure Similarity does actually take place.

"It might, therefore, be supposed that Similarity is, after all, but a mode of Contiguity, namely, the contiguity or association of the different features or parts of a complex whole. The inference is too hasty. Because contiguity is a part of the fact of the restoration of similars, it is not the entire fact. There is a distinct and characteristic step preceding the play of this mutual coherence of the parts of the thing to be recovered. The striking into the former track of the agreeing part of the new and the old, is a mental movement by itself, which the other follows, but does not do away with. The effect above described, as the consciousness of agreement or identity, the flash of a felt similarity, is real and distinct. We are conscious of it by itself; there are occasions where we have it without the other, that is to say, without the full re-instatement of the former object in its entireness. We are often aware of an identity without being able to say what is the thing identified; as when a portrait gives us the impression that we have seen the original, without enabling us to say who the original is. We have been affected by the stroke of identity or similarity; but the restoration fails from the feebleness of the contiguous adherence of the parts of the object identified. There is thus a genuine effect of the nature of pure similarity, or resemblance, and a mode of consciousness accompanying that effect; but there is not the full energy of reproduction without a concurring bond of pure contiguity. A portrait may fail to give us the consciousness of having ever seen the original. On the supposition that we have seen the original, this would be a failure of pure similarity" (Bain *on James Mill*, I. 122–3).

Before I criticize this passage, let me show how easily the fact which it mentions comes under our theory. When the promontory A by means of p calls up q, r, these are not

referred to A. And, unless the synthesis *p*, *q*, *r*, *s*, *t* is completed, they can not re-instate B. The uneasiness of partial but incomplete recognition is caused by the presence of connected elements, such as *p*, *q*, *r*, *s*, which, by actual incompleteness and by vague suggestion of completeness, give us the feeling that every moment another object is coming. But, although the whole *pqrs* keeps calling in other elements such as *u*, *x*, *y*, *w*, yet none of these makes up a totality we are able to subsume under any head which we know. Should however *t* be called in, then B comes at once. In this case we have the feeling of discovery, while in the former case we have the feeling of search. And all is consistent.

In Professor Bain's account we have no consistency. His view, as I understand it, is that though, for the full reproduction of B, contiguity is required, yet partial reproduction takes place without it. In other words the stroke of similarity affects us enough for us to strike into a former track, but the adhesion of the contiguous bond is too feeble to drag on the mutual play of the parts. The hammer of similarity comes down, but the flash of agreement is a flash in the pan, which fails to explode the barrel of contiguity. But in this place again, I think truth has been sacrificed to imagination.

If anything is brought up which suggests agreement, then this must involve what is called contiguity. For apart from such contiguity there would be nothing to recognize. This is readily shown. In the first place let the similarity "amount to identity:" let the differences, which went along with and qualified B, be none of them called up. Then what is there? Why *nothing* but one part of the content of A, say *p*. And *p* agrees with nothing, for what can it agree with? There *is* nothing save *itself*. But in the second place, if the differences which qualified B and made it B, are called up, then obviously we have contiguity at once; for *p* by contiguity has re-instated *pqrst*. "Oh but," I may hear, "we do *not* go on to *t*, and so we never do get so far as B. We go only as far as *pqrs*, so that we are not able to recognize the result. It would be contiguity if we went from *p* to *t*: but if we stop at *s*, it is not contiguity at all.

But this would surely be no less feeble than arbitrary. If the whole of the differences between a portrait and the idea of the original can not be given by contiguity, why then should any of them? Why not *all* be given by similarity? And if *any* are given by contiguity, why should not *all* be given, for all of them are demonstrably "contiguous"? In other words if similarity will not bring up all the differences, why should it bring up any? Why should not all be left to contiguity?

Because as before we do not start from the fact, but start from a vicious theory of that fact. In the perception A*p* the *p* is not really a particular image; and if you said *q*, *r*, *s*, *t* were associated with this mere adjective *p*, you would have deserted your vicious theory. You try to save it by inventing a fictitious substantival image *p*, which then can be brought in by similarity. But the result is a system of compromise and oscillation. You will not boldly say that A brings up all of B by similarity, and your theory forbids you to say it does so by contiguity. To satisfy both the fact and your theory you say, One arbitrary part is done by one agency, and the rest by the other. And you satisfy neither your theory nor the fact. For what is actually contiguous is not like, and what is supposed like could never have been contiguous. The particular image, which on your theory is called up, has never been contiguous to anything whatever. And the actual element, which does re-instate *qrst* by contiguity, is not anything we can call *like* A at all. It is an universal which is part of A's content. Into this confusion we are led by forcing on the facts our bad metaphysics; and the confusion at once gives place to order when we recognize that Association by Similarity has no existence.

§ 32. We have seen that reproduction of a similar idea comes under the general head of Redintegration. And if the English votary of Association, instead of declaiming against the blindness of Germans, had been willing to learn from them, he might long ago have amended his theory.

"*Si quod nunc percipitur specie vel genere idem est cum eo, quod alias una cum aliis perceptum fuerat, imaginatio etiam*

horum perceptionem producere debet. Quæ enim specie vel genere eadem sunt, ea sibi mutuo similia sunt, quatenus ad eandem speciem, vel ad idem genus referuntur (§ 233, 234, *Ontol.*), consequenter quædam in iisdem eadem sunt (§ 195, *Ontol.*). Quare si nunc percipimus A specie vel genere idem cum B, quod alias cum C perceperamus; quædam omnino percipimus, quæ antea simul cum aliis in B percepimus. Quamobrem cum perceptio ceterorum, quæ ipsi B inerant et in A minime deprehenduntur, vi imaginationis una produci debeant (§ 104); imaginatio quoque producit perceptionem ipsius B . . . .

"Idem confirmatur a posteriori. Ponamus enim nos in convivio simul vidisse hospites et vitra vino plena. Quodsi domi die sequente oculos in vitra convertis, quibus vinum infundi solet; extemplo tibi occurrit phantasma hospitum ac vitrorum vino plenorum rerumque ceterarum in convivio præsentium. Vitra, quæ domi conspicis, specie saltem eadem sunt cum vitris, quæ videras in convivio." *

Let us hear now what Maas has to say. I translate from the second edition of his *Versuch über die Einbildungskraft*, 1797.

"The first of these rules we have mentioned is the so-called Law of Similarity: All ideas which are like are associated.† I am aware that many psychologists give this law a place co-ordinate with the law of partial perception" [redintegration] "and consider it independent. But on this view the former stands too high, and the latter too low. Similar ideas can not be associated unless, and so far as, either they or their marks form part of one total perceptive state. But this holds good without exception. Two ideas, a and b, are like one another in so far as they have a common mark β. Suppose now that it is a fact that b has associated itself with a." [The explanation of this fact is that] "b contains the marks β, δ, ϵ, and a the marks β, α, γ." [On the presentation of b] "the marks α, γ associate themselves with the β," [which appears in b, and $\beta\alpha\gamma$ is then recognized as a.] "The association which takes place

* These quotations are from § 105 of Wolff's *Psych. Emp. Ed. Nova*, 1738. First published in 1732.

† "Ideas" here includes perceptions.

is thus between connected ideas, which are parts of one perceptive state." s. 55.*

I admit that the passage is so brief and cramped that I have been obliged to interpolate a commentary. But there are other passages, which I need not quote, which would settle the meaning even if it were doubtful.

From these extracts it will be plain that the school of Association have had something to learn which they never have learnt.†

§ 33. There is a possible objection we may here anticipate. "Admitted," it may be said, "that your theory explains the suggestion of similars, yet it does so indirectly. *We* explain it directly and by a simple law. And the simpler explanation is surely the better one." Anything more unscientific than such an objection I can hardly conceive. It proposes to give a simple explanation of a complex case; in other words to decline analysis, and to reassert the fact as a principle. And it proposes in consequence (as we have shown at length) to treat the simple as a complication of the complex. But the price you pay for turning a derivative law into an ultimate principle is somewhat ruinous. You have to import into the

* "Die erste von den eben erwähnten Regeln ist das sogenannte Gesetz der Aenlichkeit: alle ähnlichen Vorstellungen associiren sich. Es ist mir nicht unbekannt, dass diese Regel von vielen Psychologen dem Gesetze der Partialvorstellungen koordinirt, und für ein, von diesem unabhängiges Gesetz gehalten wird. Allein das heisst dem erstern einen zu hohen, dem andern einen zu niedrigen Rang anweisen. Aehnliche Vorstellungen können sich nur in sofern associiren, als sie, oder ihre Merkmale, zu einer Totalvorstellung gehören, welches aber bei ihnen ohne Ausnahme der Fall ist. Zwei Vorstellungen a und b sind einander ähnlich, sofern beide das gemeinschaftliche Merkmal β haben. Wenn also b, der die Merkmale $\beta\ \delta\ \epsilon$ zukommen, sich mit a worin die Merkmale $\beta\ a\ \gamma$ angetroffen werden, vergesellschaftet; so associiren sich $a\ \gamma$ mit β, sind also zusammengehörige Partialvorstellungen."

† Sir W. Hamilton not only refers to the true account of Association by Similarity, but even criticizes it. Unfortunately he had not the least idea of its meaning. He tells us first that we are to discount "Wolff who cannot *properly* be adduced." I have no notion what "properly" stands for here, and perhaps Sir W. Hamilton did not really know what Wolff says. He then proposes an emendation in the passage from Maas, which reduces it to nonsense, and his criticism shows that he had no idea of the real meaning of either Wolff or his followers (vid. *Reid*, 913–4).

simplest processes a mass of detail which is demonstrably not there. And this is surely a procedure which science will not justify.

And if I am told, "At all events the process of suggestion, as you describe it, is much too complex for a primitive mind," that objection once more only serves to strengthen me. For the process *does not exist* in a primitive mind. Similarity is a somewhat late perception, and hence can not appear at an early stage. For a rude understanding, if things are not the same, they are simply different. To see, or to feel, that two things are not the same and yet are alike, are diverse and yet in part identical, is a feat impossible for a low intelligence. It demands an advance in reflection and distinction which no sane psychology can place at the beginning of mental evolution. No doubt you may say that from the very first mental elements *are* alike, although the mind does not *perceive* it. But in saying this you open a question not welcome I should judge to the disciples of Experience. For if states of mind can *be* alike, and yet not like to the mind, what is such similarity but the identity of elements within these states? The distinction on the one hand between what *is* or *was in* the mind, and, on the other hand, that which is *felt by* the mind or is now *before it*, is, if admitted, quite fatal to the orthodox English creed. We should have an attempt to purchase consistency by suicide.

If the school of Association desired to be consistent, it might find perhaps in the "mechanism of ideas," apart from consciousness, a way of propping its tottering beliefs. But that mechanism implies metaphysical doctrines as to the unity of the soul and the permanence of ideas, which in themselves would be somewhat difficult to maintain, and which would give the lie to our most cherished prejudices.

But if consistency can be reached by no way but suicide, something after all may be said for the admission of the doctrine we have adopted—that all association is between universals, and that all consists in redintegration by identity.

§ 34. The answer no doubt will be the old "*Non possumus*. No two states of mind can have anything in common; for, if so, they would be the same, and that is impossible." On this rock of obstinate metaphysical prejudice

our explanations are broken. It would be useless to point out, as we have already pointed out, to the disciple of Experience that his own theory has been wrecked on this same iron dogma. He would say, I suppose, "Let the facts go unexplained, let miracles be invoked and fictions multiplied, let analysis be neglected and experience contemned—only do not ask me to be false to my principles, do not ask me to defile the grave of my fathers. An advanced thinker once, an advanced thinker always." And I could not answer or reproach. I respect a fidelity which I can not imitate.

But to those whose honour is not yet pledged I may perhaps in conclusion be permitted to address myself. Do you wish, I should like to ask in the first place, to speculate on first principles, or are you content to engage yourself on special subject matter? In the first case I would beg you seriously to examine the question for yourself, and not to take any assertion on trust. I can not venture to anticipate the result you will then reach (if indeed you reach any), but I feel sure that any conclusion you do come to, will not be quite the same with the orthodox doctrine as handed down in England. And to those who are not prepared for metaphysical enquiry, who feel no call towards thankless hours of fruitless labour, who do not care to risk a waste of their lives on what the world for the most part regards as lunacy, and they themselves but half believe in—to all such I would offer a humble suggestion. Is it not possible to study the facts of psychology, without encumbering oneself with beliefs or disbeliefs as to the ultimate nature of the mind and its contents? You can not have metaphysical disbeliefs without corresponding beliefs; and, if you shrink from becoming a professional metaphysician, these beliefs must be dogmas. Would it not be better to study the facts, and to let metaphysics altogether alone?

If this can be done in the other sciences, it surely can be done in psychology too. In the other sciences we know how it is done. The so-called principles which explain the facts are working hypotheses, which are true because they work, and so far as they work, but which need not be considered as a categorical account of the nature of things. The physicist,

for example, is not obliged to believe that atoms or ether do really exist in a shape which exactly corresponds to his ideas. If these ideas give a rational unity to the knowledge which exists, and lead to fresh discoveries, the most exacting demand upon the most exact of sciences is fully satisfied. The ideas are verified, and the ideas are true, for they hold good of the facts to which they are applied. And to suppose that the metaphysician should come in, and offer to interfere with the proceedings of the physicist or to criticize his conclusions, is in my judgment to take a most wrong view of metaphysics. It is the same with psychology. There is no reason why in this science we should not *use* doctrines which, if you take them as actual statements of fact, are quite preposterous. For the psychologist, as such, is not interested in knowing if his principles are true when taken categorically. If they are useful ways of explaining phenomena, if they bring unity into the subject and enable us to deal with the fresh facts which arise, that is really all that, as psychologists, we can be concerned with. Our principles are nothing but working hypotheses : we do not know and we do not care if they turn out to be fictions, when examined critically.

That is the way in which pyschology surely might be studied. And if we studied it in this way we should escape some controversies. I, for instance, should lose all right and all desire to criticize the "Laws of Association" on the ground of their untruth, if they only ceased to proclaim themselves as statements as to the real movement of the mind. Within the same field of empirical psychology I should offer what I think is a more convenient hypothesis, and any objection to that which rested on metaphysics would be at once ruled out of court. We might perhaps thus advance the study of the subject in a way which now seems quite impossible. And if we did not make much advance in knowledge, we should save ourselves at least a good deal of bitterness.

§ 35. The suggestion is offered in great humility, since the obstacles it must meet with are overpowering. The first obstacle is the prejudice of a bad tradition. It is supposed that the psychologist must be a philosopher. He is used to think himself so, and he is not likely to accept a lower place.

And this objection is in fact, I fear, unanswerable. I would give him the name of philosopher for his asking, but I could not admit him as a student of first principles. And the second obstacle is like the first. We get into what, I suppose, deserves the name of an antinomy. The psychologist is to confine himself within certain limits; he is not to cross over into metaphysics. But unfortunately if he is not a metaphysician he will not know what those limits are. And it is the same to some extent with all the sciences. The physicist, for instance, is constantly tempted to think that his ruling ideas are ultimate facts. And this temptation is fatal to the mere specialist. It is only, on the one hand, a general culture and largeness of mind, or else some education in metaphysics, which saves him from this error. And it is much worse in psychology. The subject brings with it a special temptation; and, if all the truth must be told, the same great minds that devote themselves to physics, to chemistry, or to biology, do not take up psychology. And then again the psychologist is probably a dabbler in metaphysics. A little metaphysics is not enough to show that his so-called principles are fictions. And our leading English psychologists perhaps only know a very little metaphysics. And, having a limited acquaintance with the subject, they persuade themselves, and (what is worse) one persuades the other, that they have completely mastered it. It is to be feared that this evil must to some extent continue.

And there is a final obstacle. The student of metaphysics may form an opinion as to the real nature of psychical phenomena. And knowing, as he thinks, the truth about these facts, he will be led to insist on a psychological interpretation which is strictly true. He will interfere with the empirical psychologist, and will himself contribute, by what he thinks good metaphysics, to the begetting of bad metaphysics in opposition. This is certainly an error, but it is an error, I fear, which will never quite vanish. When a man has once seen that every single science except metaphysics makes use of fictions, he is apt to conclude that the next step is for him to remove these fictions and to substitute the truth. But, if he looked closer, he would see that human beings can not get on

without mythology. In science, in politics, in art, and religion it will always be found, and can never be driven out. And, if we confine our attention to science, we must say that there is only one science which can have no hypotheses, and which is forbidden to employ any fiction or mythology, and that this science with some reason is suspected of non-existence.

§ 36. We have approached a large subject which we can not deal with, and which might well occasion misgiving and doubt. We need give way to neither in our rejection of the principles of the school of Association. We reject them in the name alike of metaphysics, of psychology, and of logic. In behalf of metaphysics we protest against the basis of dogmatic Atomism, and we protest against the superstructure of a barbarous mythology. It is not true that mental phenomena are mere particulars. It is not true that ghosts of impressions leave their graves. It is ridiculous to couple the existent and non-existent, or the present and the absent, by a relation which implies the presence of both. In defence of psychology we protest against an hypothesis which has to postulate phenomena which are clearly absent, and then to postulate their removal by a process which is not present. When a single hypothesis explains the facts, it is surely unscientific to employ a complication which works no better. And, in behalf of logic, we must protest once more. The essence of inference can hardly be a principle which later we recognize as a principle of error; and which, if the theory of Association were true, we should hardly get to perceive was false. It is an ill omen for Logic if it fails to show that what in the highest stage is accepted as a canon, was active from the first developement of the soul as the guide of its conduct and ruler of its life.

NOTE TO CHAPTER I.

§ 1. Though I have no space, and perhaps no strict right, to deal with the subject here, I must yield to the temptation of making some very brief remarks on the doctrines noticed in § 2 of this chapter. These go by the names of Indissoluble Association and the Chemistry of Ideas.

The first of these doctrines is supposed to have a very great metaphysical importance. Mere chance conjunction, if often repeated, will beget, we are told, an union of ideas which is irresistible. This shows that what seems to be a necessary connection may be no more than an accidental adherence. From this we conclude that a necessary connection is no canon of truth. And this proves that our trust must be placed elsewhere. The Logic of Experience tells us, of course, what it is we are to trust to.

For myself, in the first place, I never could get any information from that Logic which seemed intelligible, and so I will confine myself to the former part of the preceding statement.

§ 2. The first fault I have to find is that it does not go far enough. We need not have a *repeated* conjunction. One single instance is enough to give rise to a necessary connection. For, as we should say, what is once true is true always.

§ 3. I have to complain, in the second place, that all kinds of combination are called *association*. But association surely implies that the elements which are joined might not have been joined. And this should be proved, or at all events made probable, before co-existence is assumed to be mere association.

§ 4. It may be replied, "Even if the things are connected, yet, as we perceive them, their union *for us* must be chance conjunction, and therefore association." But this again should in no case be asserted without some ground. It is not always self-evident that the mind *could* have had one element without the other. And where you fail to show that this is the case, you cannot talk of association.

§ 5. I shall be answered, "What we prove is that in certain cases mere chance association has produced necessary connection; and we argue from this that it may be fairly suspected of doing so in all. The possibility is proved and the possibility is enough." I can not enter here into the merits of this argument which I shall hereafter show is logically vicious (vid. Bk. III. II. Chap. III. § 22); but suppose that for the present we admit it. What conclusion follows? That we are fallible men? We knew that before. That we are to trust to anything else? Then what else? Admit for argument's sake the possibility that *all* our beliefs are baseless, what then? Why nothing. If we mean to go on living and thinking, we dismiss this possibility as *idle*. Suppose we all are victimized by chance conjunction, are we not *right* to be so victimized?

§ 6. Association implies *other* conditions. It implies contingent circumstances. When a chance conjunction is taken by an error for a necessary connection, the mistake really consists in defective analysis. The remedy is found in the progress of analysis, assisted

probably by fresh fact. Where this remedy is impracticable, no remedy can be applied. For no other is possible.

§ 7. Apart from mental chemistry, which we shall consider presently, a connection of ideas could not continue to be necessary when it demonstrably has arisen from association. And this is quite obvious. For the connection of ideas supposes a content which is ideally inseparable, and the knowledge of the association involves this ideal separation. The experience which shows the fact of the association, is at the same time the analysis which loosens its bond.

§ 8. This however is a minor point. To the objection that *possibly* all truth may be nothing but chance association, we reply (as above) that, supposing this for argument's sake to be true, we can not trouble ourselves with idle possibilities. But if you wish to go beyond this idle possibility, you must show cases where unreasoning chance conjunction has produced false belief *without confusion.* You must show, that is, that the belief in the connection was *wholly* false; that it was not a true belief in a real fact made false simply by a confusion between the relevant and irrelevant elements in the connection. But this, I think, has never been shown.

§ 9. If association rests on conjunction in perception, then that is a valid ground for belief. It is deceptive merely so far as it is unanalyzed, and confuses the irrelevant with the relevant. Otherwise it is a *proof* of necessary connection. But then this latter is not *mere* association. For it is not every conjunction in presentation which can be called an association, but only those conjunctions which result from chance. And chance disappears before analysis.

§ 10. I will now turn to the doctrine of mental chemistry. Elements by virtue of repeated chance conjunction are said to cohere in such a way that they form a third product which has the qualities of neither. But this in the first place would not be *association*, since that term implies that the individuals continue. In a chemical union the molecules of the substances cease to be molecules of either substance. It is therefore nonsense to say that they are *associated.*

§ 11. This of course may be said to be a question of words. But the fact of such union in the case of ideas has, at least in my knowledge, never yet been shown. It can not be called impossible, nor should I at least have said that it was even improbable, but I have never seen any certain instance of it.

§ 12. In the case of *emotions* this "chemical union" does seem to take place. But even here there might be doubt if the emotion should properly be considered as an "union." It might rather be a new reaction on a fresh compound material. But, however that be

it is true that the emotional product often can not be analyzed. It can only be reconstructed perhaps in part hypothetically. And again if we take intellectual *functions*, there is no doubt that in the process of mental developement "faculties" are produced which are different in kind from what went before. But then again these functions are hardly unions of ideas. When you strictly keep to mental *objects*, I think you must say that no instance of what looks like chemical combination has yet been found.

§ 13. It is of course mere waste of time to bring forward as evidence cases where the *fact* of the association is not admitted. It is for example a mere circle to instance the idea of visual extension, since visual sensations *without* extension are the merest hypothesis. Not only can this alleged fact not be observed, but there are very strong reasons for rejecting it wholly.* It is not less idle to bring forward a product, such as the sensation of white, and then roundly assert that it is the fusion of different sensations. Perhaps it is, but you would have to show the existence of these sensations in the particular case, and give some reason for your belief that *they* were transformed. It is finally ridiculous to adduce, as a chemical product, an idea which can be separated at once and with ease into its component parts. J. S. Mill when hard pressed seems to play as his trump card the idea of *infinity* (*Hamilton*, Note to Chapter XV.). But infinity, as he understands it, hardly calls for analysis. Of itself it falls apart into its elements, for it is a mere *mechanical* union.

The conclusion must be that the chemistry of ideas is no more than a hypothesis. I do not think in any case it would be the right way to state the fact. But the fact itself has not been clearly shown to exist. In the second place, were we convinced that mere chance conjunction was able to lead to it, then nothing would follow except what we know, viz. that there is some general antecedent probability that any conviction is false. This result makes no difference either to theory or to practice.

* Vid. Stumpf, *Raumvorstellung*.

CHAPTER II.

THE ARGUMENT FROM PARTICULARS TO PARTICULARS.

§ 1. At the point which we have reached a discussion of this subject may seem inexcusable. If we have shown that no association is possible except between universals, and that in the very lowest stages of mind universals are used, we may fairly be reproached by the reader who is anxious to learn something new, if we linger over errors the root of which has long since been torn up. For supposing that the results we have attained to are sound, the question is settled. To reason directly from particulars to particulars is wholly impossible. It must be at most a desire of the mind which this world can not gratify, a postulate *a priori* given by an intuition, that disappears before analysis and is rejected by experience.

§ 2. But since it is possible that the reader of this Chapter has not accepted the conclusions we obtained, since it is not unlikely that he has passed them over, let us try once again if we can not do something to turn the light into this refuge of darkness. We must not expect to persuade the disciple of the Experience Philosophy. It is not for anything we are likely to offer, that he will desert the fashionable and easy creed in which he has been reared. But at least we shall have tried not to leave him an excuse. He must not say that we have been afraid to look his idol in the face.

There is however one thing we will not do for his sake. We decline to supply a direct examination of the well-known chapter in J. S. Mill's *Logic*. It would require much more space to set out the ambiguities inherent in that chapter, than we can give to the discussion of the question itself; a discussion to which, I may remind the reader, I consider that at this stage he has no right.

§ 3. Why should we not reason from mere particulars? Do our reasonings never rest upon fact? And what are facts if they are not particulars? Either then we never, starting from fact, conclude to fact, or else we infer particulars from particulars. This result may so be deduced from first principles. And common experience supports the result. From cases we have known we go to fresh cases without an appeal to any general principle. We have seen something happen and, given a new instance, we argue at once that it will happen again. But we have no reason other than this fact to give for our conclusion. We thus in the second place have proved our thesis *a posteriori*, as before we proved it *a priori*. And now we add an indirect proof. If for reasoning were wanted major premises, then the lower animals could not reason. But they do reason, and therefore the thesis is proved.

§ 4. How shall we escape from this array of proofs? Are they not unanswerable? To me they seem unanswerable, and I have not the smallest wish to escape them. I admit them and embrace them; but I ask a question, *What is it that they prove?*

They prove first that, when we go from experience of facts, this experience is the foundation of our inference. They prove again that we do not always go from an explicit major premise, and that therefore another way of reasoning is possible. And in defence of these results I am as zealous as any of my readers can be. If he likes to say beside that a syllogism in extension is a *petitio principii* and no argument at all, he will urge what long ago I have endorsed. But let us come to the conclusion. If you mean to argue to no more than this, that experience of particulars is a basis of inference, and that no explicit major is required, I am ready to support you. But if you mean to conclude, *Therefore* we reason from particulars as such direct to particulars, I object at once. The conclusion does not follow from the premises, and it also is wholly contrary to experience.

§ 5. We have in fact to do here with a common-place logical blunder. The thesis *to be* proved is that an inference is made direct from particulars, as such, to other particulars.

The conclusion which *is* proved is that from experience of particulars we somehow get a particular conclusion. Not to see the enormous difference of these assertions is to fall into a gross *ignoratio elenchi.* To prove the thesis in dispute it is necessary to assume that *either* we go direct from particulars to particulars, *or else* advance through an explicit syllogism (perhaps even an explicit syllogism in extension). No sort of evidence is offered to show that this alternative exhausts the possibilities; and it disappears the moment we confront it with facts.

§ 6. In reply to the assertion that we are able to argue from particulars to particulars, I would ask in the first place what particulars are meant. Am I to understand that the past experiences in their particularity are the premises used in this supposed inference? If I am told this is so, of course I reply that we have here a mere psychological fiction. Particular images of past occurrences, which retain the special marks of the originals, are not available. The doctrine that each perished perception leaves an unblurred unabridged counterpart of itself, is a preposterous invention (cf. pp. 37–9, and Book II. II. Chap. I.).

§ 7. It is again a mere error which sees in the lowest form of inference the presence of one or more images of the past, together with a fact which they are used to qualify. When a present perception is modified by the suggestions of past experience, these suggestions do not come from particular images of perished events. This theory is a second pure invention (cf. *ibid.*).

§ 8. In the third place when, at a higher stage of developement, the past event is as such called to mind, and when we do argue from a particular image, yet even then we do not argue from its particularity, from its psychological environment and temporary colouring. We argue from the content, the idea which can exist in different times and under diverse psychological conditions. And once more, and in the fourth place, this idea itself need not be used as a whole, but we may argue from one part of it.

§ 9. A child has come to know that, when the dog is pleased, he wags his tail. On this he argues that, when the

cat wags its tail, it must be pleased. What is it he proceeds from? The error we are considering actually supposes that one or more images of foregone occasions, presenting the dog pleased and with his tail in motion, come before the mind, and that, on this, the perception of the cat now moving its tail directly gives rise to the conclusion, The cat is pleased. But the question arises, How is it that one attribute is taken from the dog-images and given to the cat, without the rest going with it? Does not this use of one part of the dog-images, and the neglect of the rest, show that something happens to the images in question, and that, however it has come about, the inference is *not* drawn from the whole of any one of them? Suppose again that they differ among themselves, do we argue direct from the whole of all of them? But if not, from what else?

§ 10. The facts I should have thought would have left little doubt, that the result of experience is a connection of attributes, where the differences of their particular subjects are blurred—a confused universal, which may appear to the mind in a particular imagery, but is used without any regard to that. I confess I should have thought that it was very clear that, in the special cases where we argue from recollection, we use the past event as a type or instance. And since both this past event and the present perception come to us as instances, we neglect some of the differences that exist between them. We do not know the principle, but we feel "it is the same thing" in both cases. But, if so, the premise from which the conclusion directly comes, is not the particular. It is an universal extract, what we call a "general impression."

§ 11. Reasoning from a particular to a particular is obviously an argument from analogy. In this we all know that we do not use the whole of that particular from which we argue. It was an inference by analogy which deceived the child (§ 9). He took from the dog a relation of qualities and transferred it to the cat. What he argued from was this general relation, and it was a false analogy, just because it was a bad generalization. Again, why do we object to false analogies? Is it not because in them we treat some fact as another instance of a rule, when there is no common rule and

the facts are not instances? And is not this a hint that in true analogy we use a principle though we can not state it?

§ 12. This leads us to put another question. Suppose that *per impossibile* we did have before our minds a number of particular images, and did argue from them directly; would not this inference be a very bad one? If I say "A, B, and C are α, and there is *no difference* between D and A, B, and C, *therefore* D is α"—is not this a circle—a frivolous *petitio?* Again if I say "A, B, and C are α, and D is *different* from A, B, and C, *therefore* D is α"—is not this a bad argument, so glaringly bad that no child and no beast could be got to use it?

But if we amend this semblance of reasoning, and bring it to the form of a real inference—if we say "A, B, and C are α, and therefore D, *which resembles them*, is α," we are no longer arguing from mere particulars. We are arguing from the resemblance, from a point or points which D has in common with A, B, and C. It is *not* because A, B, and C are α, but it is because in them some element β is α, and because again we find β in D, that we argue "*therefore* D is α." For whenever we reason from resemblance we reason from identity, from that which is the same in several particulars and is itself not a particular. And is it not obvious that, in arguing from particular cases, we leave out some of the differences, and that we could not argue if we did not leave them out? Is it not then palpable that, when the differences are disregarded, the residue is an universal? Is it not once more clear that, in vicious inferences by analogy, the fault can be found in a wrong generalization?

§ 13. I will conclude with an appeal to common experience. We all know very well that in our daily life we reason habitually from the results of past experience, although we may be wholly unable to give one single particular fact in support of our conclusion. We know again that there are persons, whose memory is so good that they recall past details in a way which to us is quite impossible, and who yet can not draw the conclusions which we draw, since they have never gone beyond the reproduction of these details. It is not the collection of particular facts, it is the general impression one gets from these facts which is really the *sine qua non* of

reasoning; and it is that from which we really go to our result.

If you begin the discussion of a question, such as this, with a vicious disjunction, you can not go right. As a preliminary to discussion you have excluded the truth. From the alternative —either an explicit syllogism or an inference from particulars to particulars—you can hardly fail to get a false result. You may infer— The syllogism in extension is no argument, and *therefore* we go from particulars to particulars. You may infer —It is not possible to argue from particulars, and *therefore* we reason always in syllogisms, explicit and (if you like) also extensional. But to me it is nothing which conclusion you adopt. For both are errors, and both at bottom *are one and the same error*. They are twin branches from one root of inveterate prejudice and false assumption.

§ 14. The present Chapter has been so short that I take this opportunity to deliver my mind from a weight that oppresses it. I intend to be guilty of what some readers may think an unpardonable omission. It is true that I do not undertake to criticize every theory from which I dissent; but there is one of those theories which I propose to pass over, that may seem to call for recognition and enquiry. Mr. Spencer, in his *Psychology*, has developed a view of the nature of inference, which despite its ingenuity, despite its perception of some of those truths which the syllogism has forgotten, I am obliged to consider fundamentally mistaken. It has always seemed to me so arbitrary and so forced, so far away in the end from the real facts, that I can not believe a discussion of it here would tend to throw any light on the problems of logic.

More than once, I admit, Mr. Spencer's position in English philosophy induced me to think that I had no right to omit all notice of his peculiar views. The sacrifice of space, the chance that I had failed to follow the process which had brought him his results, did not weigh against the danger that I might have seemed to avoid confronting my own doctrines with those of an established master in the subject. But there came to my mind another consideration, which decided the result and fixed my purpose to omit the examination. The

late Mr. Mill and Professor Bain have both written systematic treatises on logic. They have entertained a view of Mr. Spencer's powers and philosophical performances which is not mine. Mr. Mill especially has expressed his conviction in such terms, that beside it those praises, I should otherwise have felt were due to Mr. Spencer, would sound like detraction. Both must have been aware that Mr. Spencer has more than once published what appears to be a novel theory of reasoning. And yet neither (so far as I know) has examined the most peculiar and salient assertions of that theory.

And I thought that I might venture on a humble imitation of their common silence. Did they fail to follow Mr. Spencer's demonstrations, did they even think them an unprofitable subject, in either case I claim the protection of their authority. But, if neither is the truth and they considered Mr. Spencer to be of one mind with themselves, and to say the same thing in a different form, then once again they unite in excusing me. I surely am not wrong if I too omit all criticism, or at least delay it till I have seen some cause to think that it is wanted.

CHAPTER III.

THE INDUCTIVE METHODS OF PROOF.

§ 1. We have seen that in reality there is no such thing as an inference from the particular to a fresh particular. In this Chapter we approach a cognate superstition. In England, at least if we go with the fashion, we all have to believe in an Inductive Logic, which, starting from particular given facts, goes on to prove universal truths. Its processes, exact as the strictest syllogism, surrender themselves to the direction of Canons, reputed no less severe than *Barbara* and believed with reason to be far more fertile. I am afraid I may lose the reader's sympathy when I advise him to doubt the union of these qualities.

§ 2. To question the existence or deny the efficacy of those methods of reasoning (whatever they may be), by which modern science has made its conquests, would of course be absurd. To succeed on a great scale is to prove one's title. And it is not within the scope of this work to investigate either the nature of the processes which science employs, or the amount of evidence which it accepts as proof. What I wish to assert is that, starting from particular perceptions of sense, there is no way of going to universal truths by a process of demonstration perfectly exact, and in all its steps theoretically accurate. The induction of logicians, so far as it professes to make that attempt, I shall try to show will not stand criticism.

§ 3. We need not discuss at any great length the Method which is called Complete Induction. To examine a number of individuals and to say of *all* what you say of *each*, is in the first place no inference to an *universal* truth. A collective term, if taken collectively, is no more universal than if taken distributively (p. 82); and the inference, if admitted, does not

reach the conclusion which we have in view. But, in the second place, the inference itself is inadmissible. In other words if you start from *each* and end with *each*, there is no process; but if you predicate of the collection what is true of each member, there is palpable error. The Induction by way of Complete Enumeration must be rejected as either tautologous or false (cf. Book II. I. Chap. II. § 5).

Or again if we take the Induction in another sense, it changes its character. If first by counting you arrive at *all*, and then from *all* pass on to *any*, that is not a process which need be false or need merely repeat the fact it began with; but then it is not based simply upon the particular *data*. If a flock of sheep have all had medicine, I know that, within the given enclosure, any sheep has been dosed, and I connect the attributes without thinking of the individuals. The conclusion is valid and is really universal; but it implies a process which goes beyond counting. "This sheep and that sheep and the others are dosed;" that is the first premise; but a second is wanted. We may write it "This sheep and that sheep and the others are every sheep that is within this fold," or again "The fold does not contain any sheep but these which we have counted." It is on the strength of this premise that we go on to conclude, "If any sheep is now within the fold he must have been dosed." We seem to argue from "all" to "any," but the "all" has ceased to be the *mere* collection.

We have first the assurance that the whole field has been surveyed, and that we have not neglected any relevant matter. Counting is the way in which we attempt to obtain this assurance. But the enumeration, if it is to be complete, must be qualified by the privative judgment, Nothing in this fold can have been uncounted. The collection is thus identified with every possible sheep that comes under the condition of being in the fold. This is one side of our process. The other side consists in an act of abstraction, and in the selective perception of one connection of attributes throughout our whole subject matter. Then, given an individual possessing the condition of belonging to our fold, we pass at once to the other connected attribute.

Now the procedure by which we get this general connection

is in a sense "inductive;" and assuredly once more it has employed counting. But then the counting *by itself* is not the induction, and is not by itself a generalization. The discriminative analysis, which goes with the counting, is the real agent which procures the universal, and which contains the "induction" (cf. Book III.). It is this which generalizes from the facts. But it does not go beyond one single case, since its validity depends on the privative judgment by which any folded sheep must be one case with the sheep observed.

To repeat, if you confine yourself to mere counting, you get no general result. If you attempt to advance from the basis of mere counting your ground is unsafe. If you proceed from a *complete* Enumeration, then the warrant of completeness falls outside the counting. What generalizes is the selective perception which isolates and secures the connection of adjectives. But the conclusion depends on the guarantee of completeness. It is valid because the connection is found in a whole, which is warranted to anticipate every possible case of a certain kind.

§ 4. But induction by way of Enumeration is not the method we are asked to believe in.* In the treatise which, partly from merits of its own and partly also from other causes, has threatened to fasten itself on us as a text book, we find the so-called Canons of Induction, collected and developed from other writers, and formulated with a show of rigorous accuracy. It is the illusory nature of these self-styled proofs that I wish to point out in the present chapter. We must not be afraid of the shadow of authority. The balance of authority among modern logicians is, I think, against the claim of the inductive proofs, and is not on their side. And perhaps already, from experience we have had, we may be prepared to find that Mr. Mill may at times be mistaken.

§ 5. We must remember above all things throughout this discussion that the question is *not*, Can discoveries be made by the use of the Methods? They may be as efficacious in actual practice as is asserted by some, or as practically inadequate

* The reader of Mill's *Logic* will remember, on the other hand, that with him the whole inductive process is taken to stand or fall with a proof by way of *incomplete* Enumeration.

and unsuited for work as is affirmed by others. That is not the issue which we have before us. The question we have to answer here is, Are they valid ways of proof, by which we can go from facts to universals?

For that is the claim which the Canons set up. "The business of Inductive Logic is to provide rules and models (such as the Syllogism and its rules are for ratiocination) to which if inductive arguments conform, those arguments are conclusive, and not otherwise. This is what the Four Methods profess to be." J. S. Mill, *Logic*, Bk. III. ix. § 6. "In saying that no discoveries were ever made by the four Methods, he affirms that none were ever made by observation and experiment; for assuredly if any were, it was by processes reducible to one or other of those methods" (*ibid.*). "But induction is not a mere mode of investigation." "Induction is proof; it is inferring something unobserved from something observed; it requires, therefore, an appropriate test of proof; and to provide that test is the special purpose of inductive logic" (*Logic*, III. ii. § 5). We can have now no doubt about the nature of this claim; and this claim it is that we are going to discuss.

§ 6. I shall endeavour to show three things: first that the Four Inductive Methods can not be used if we start with mere facts, that the Canons presuppose universal truths as the material upon which the work is to be done; and that therefore, if valid, the Methods are not *inductive* at all, in the sense of generalizing from particulars. In the next place I shall briefly exhibit the real nature of the reasoning used in the above Four Methods, and shall point out that its essence is not thus inductive. And finally I shall show that not one of the Canons is a test of proof, and that by every one you can bring out what is false. None of these three positions depends on the others. If the Canons are invalid, if their essence is not inductive, or if they can not be applied to individual facts—if in short any one of these contentions is established, the inductive logic is certainly refuted. And I hope to establish firmly all three.

§ 7. (I.) In the first place there is no doubt at all that the basis, from which we are to start in induction, consists primarily of particular given facts. I need cite no passages to establish

this point. We naturally expect then to see on the one side the material as yet untouched by the Methods, and on the other the operation of these agents on the crude subject matter with which they must begin. This natural expectation is doomed to disappointment.

(*a*) A suspicion of the shock which we are destined to receive, may have come from the effrontery of the Method called "Residues." This estimable exemplar of 'our great mental operation" comes up to us placarded as one of "the means which mankind possess for exploring the laws of nature by specific observation and experience," and then openly avows that it depends entirely on "previous inductions." Unless supplied beforehand, that is, with one or more ready-made universal propositions, it candidly declines to work at all. We enquire of "Residues" where we are then to begin, and she says, "I do not know; you had better ask 'Difference.'" We anxiously turn to consider "Difference," and are staggered at once by the distressing extent of the family likeness. A chilling idea now steals into the mind; but we have gone too far to retreat at once, so, resolutely turning our back upon "Residues," we begin our examination.

(*b*) We look at the samples of the work produced, and we find the same thing turning up everywhere. The material supplied to be dealt with by the Methods is never facts but is always universals. Sometimes an open and professed generalization is used as a starting point. But, where this is not done, the material is never a particular fact. It has always been subjected to such previous operation that it is able at once to be taken and used as a "case" or "instance." But this means that already it is an abstract statement, ideal and not real, capable of repetition with other environment, and without doubt universal. Take the very first instance: "Let the antecedent A be the contact of an alkaline substance and an oil. This combination being tried under several varieties of circumstances, resembling each other in nothing else, the results agree in the production of a greasy and detersive or saponaceous substance" (*Logic*, III. viii. § 1). And this is the *raw material* which is supplied. Before I begin my induction I am to know already that, under certain sets of definite

conditions exactly known, certain results have followed. But, if I know this, I also know that these results will *always* follow given the conditions. Every one of the instances is already an universal proposition; and it is not a particular fact or phenomenon at all.*

§ 8. It seems at first a strange obliquity of instinct to choose illustrations which *can not* illustrate.† But on turning to examine the Canons themselves, our surprise gives place to another feeling. The illustrations have been selected, not according to choice, but from hard necessity. For the Canons are such that *ex hypothesi* they can not possibly work upon any material but universal propositions.

FIRST CANON.

If two or more instances of the phenomenon under investigation have only one circumstance in common, the circumstance in which alone all the instances agree, is the cause (or effect) of the given phenomenon.

SECOND CANON.

If an instance in which the phenomenon under investigation occurs, and an instance in which it does not occur, have every circumstance in common save one, that one occurring only in the former; the circumstance in which alone the two instances differ, is the effect, or the cause, or an indispensable part of the cause, of the phenomenon.

THIRD CANON.

If two or more instances in which the phenomenon occurs have only one circumstance in common, while two or more instances in which it does not occur have nothing in common save the absence of that circumstance; the circumstance in which alone the two sets of instances differ, is the effect, or the cause, or an indispensable part of the cause, of the phenomenon.

FOURTH CANON.

Subduct from any phenomenon such part as is known by previous inductions to be the effect of certain antecedents, and the

* Cf. Whewell, *Philosophy of Discovery*, p. 263.

† There is an exception which I will deal with in § 9.

residue of the phenomenon is the effect of the remaining antecedents.

FIFTH CANON.

Whatever phenomenon varies in any manner whenever another phenomenon varies in some particular manner, is either a cause or an effect of that phenomenon, or is connected with it through some fact of causation. (Mill, *Logic*, III. viii.)

Consider the phrases "*only one circumstance in common*," "*every circumstance in common but one*," "*nothing in common save the absence of that circumstance.*" Only think for a moment and realize what they mean, and then take on the other hand a given fact of perception. The fact is *made* a particular fact by the presence of that, the absence of which is postulated beforehand by these formulas. A universal judgment is *made* universal by just those attributes which are pronounced indispensable in the material for these Methods. The moment you have reduced your particular fact to a perfectly definite set of elements, existing in relations which are accurately known, there you have left the fact behind you. You have already a judgment universal in the same sense in which the result of your "induction" is universal. Let us take once again the very first instance. The universal which you come to is "that the combination of an oil and an alkali causes the production of soap." The universals which you start with are that an oil and alkali, if combined under conditions *bc* and *de*, in each case produce soap. But how can you deny that these latter are universals? No doubt they are impure; but the result of the "induction" is surely not quite pure. And is an impure universal no universal at all? If you assert this, you deny the efficacy of your "induction." If you will not assert it, then you admit that your "inductions" are not inductive, since the base they start from is not individual facts. If we regard the formulas for a little steadily, we must surely see that an "instance" which is capable of being so formulated, has had already done upon it that work which we heard the Methods, *and the Methods alone*, were capable of performing. And, if so, these Methods

must retire from the field or withdraw their claims. Something like a farce has been played before us, whether we consider the airs and pretences of the Canons, or remember the promises and the boasts of their patron.

§ 9. But I may be reminded of and in fairness I must quote an instance, selected by the author himself, to show that his Methods can deal with common material. And the instance has the greater relevancy here, since he devised it expressly to meet the objection that the conditions of his formulas could not be found in facts.

"If it had been my object to justify the processes themselves as means of investigation, there would have been no need to look far off, or make use of recondite or complicated instances. As a specimen of a truth ascertained by the Method of Agreement, I might have chosen the proposition 'Dogs bark.' This dog, and that dog, and the other dog, answer to ABC, ADE, AFG. The circumstance of being a dog, answers to A. Barking answers to *a*. As a truth made known by the Method of Difference, 'Fire burns' might have sufficed. Before I touch the fire I am not burnt; this is BC; I touch it, and am burnt; this is ABC, *a*BC." (*Logic*, III. ix. 6.)

The Canons we think are not hard to content if this will satisfy them. But surely their author had forgotten them for the moment. By seeing three barking dogs I perceive that they "*have only one circumstance in common.*" By standing in front of a burning fireplace, and then touching the fire and being burnt, I am to know that the two facts "*have every circumstance in common but one.*" Is not this preposterous? Surely it is clear in the first case that Mr. Mill's way of arguing might prove just as well that all dogs have the mange, and in the second that every fireplace blisters. And these conclusions hardly seem to be sound.*

If we have succeeded so far in establishing this point, then the Methods of induction are placed in this dilemma.

* As a test of the writer's accuracy in small points, we may notice that in the second example there is a mistake in the working of the Method. The right conclusion is "Touching burns;" for the fire is not the differential condition. It was there before I touched it, and if it was not there, then we have *two* differences and another kind of mistake.

Because they *presuppose* universal truths, therefore they are not the only way of proving them. But if they are the only way of proving them, then every universal truth is unproved.

§ 10. (II.) The second assertion I have now to make good, is that the process of the Methods is not *inductive*. I do not mean merely that, as we have seen, they can not be applied except to universals. I mean in addition that it is not at all of the essence of their process to bring out a conclusion more general than the premises. The process is one of elimination (cf. Book III. p. 383). By removing one part of an ideal construction you establish the remainder. And hence the result will be more abstract than the whole original *datum*, but it need not be more abstract than some of the premises; on the contrary it may be less so. If five plums, two apples, and ten nuts balance the scales against three pears, two peaches, and six grapes, when I know that the nuts weigh the same as the grapes, and the apples as the peaches, I infer that the plums and the pears are equal by an ideal process of removing the rest. But if this is "induction," then "$x + 5 - 3 = a + 4 - 2$, and therefore $x = a$," and again "A is either *b* or *c*, A is not *c*, and therefore it is *b*," will also be inductions. And if everything is induction which is not syllogism, then certainly these inferences are all inductive. But such an assumption would surely be quite erroneous. It finds its parallel in the counterpart mistake, that, because the Inductive Methods are not really "inductive," therefore they are syllogistic.

The Methods are all of them Methods of Residues or Methods of Difference, and they all go to their conclusion in the self-same way. They fix a relation between certain wholes, and then, by the removal of parts of each, establish this relation between the remaining elements. In the Methods of Agreement and Concomitant Variations the principle is the same as it is in the rest. In the former the *data* are ABC – *def*, AGH – *dij*, AKL – *dmn*. It is then assumed that the *d* in *def*, *dij*, and *dmn*, can not be produced by a different cause; and hence since BC, GH, KL are different, they do not produce *d*. A is the residue or difference, and therefore A is the cause. The process we shall see is vicious, but, such as it is, it is elimination. In Con-

comitant Variations we seem to have $A^1BC - d^1ef$; and then, when A^1 becomes A^2, we have $A^2BC - d^2ef$. From this whole take away $^1BC - {}^1ef$, $^2BC - {}^2ef$ and the conclusion is $A - d$. The principle involved is the same throughout, and the apparent failure to see this, and the setting down of two or three co-ordinate axioms for the different Methods, is another sign that the writer had never got really inside his subject. The different Methods are different applications of one single process, and since the premises eliminated may be just as abstract as the conclusion left behind, this process can hardly be called "inductive."

§ 11. Having seen first of all that the Canons will not work unless applied to universals; having seen, in the second place, that within these limits their procedure is not essentially one of generalization, we come now to the third of our objections. The Methods are vicious and the Canons are false.

(III.) I do not mean to say that, for all the purposes of discovery, the flaws in the Methods amount to serious mistakes. Such a contention would lie beyond the scope of my volume. It is certain, however, that independent logicians, such as Dr. Whewell and Professor Jevons in our own country, and Professors Lotze and Sigwart in Germany, have taken a view of the process of scientific discovery which is not favourable to the claims of the Four Methods. But whatever may be the usefulness of these Methods, the point here at issue is their validity as *proofs*.

What I wish to show is that they will not prove anything beyond this or that individual case. They pass to their more general conclusion by illegitimate assumptions.

§ 12. I think the reader will agree that, if a method will prove a false conclusion from premises which are true, then that method must be logically vicious, and its Canon, which serves as a test, must be false. Now it is stated by Mr. Mill himself that the Method of Agreement will prove false conclusions (*Logic*, Chap. X.). The Method is "uncertain" and has an "imperfection." But it still continues to figure as a proof, and the Canon is left standing in its naked falsity. We also have "axioms" implied in this Method, which can hardly be true if the Method is false, and which yet are left

exposed to the daylight. We are told (Chap. X. § 1) that in chapters preceding false assumptions have been made, and yet the chapters with all their contents are recommended to us still as a sort of Gospel. And here I must frankly confess myself at a loss. Can the writer really have known that all his Canons were false statements? Whether he did or did not, I will not here enquire, for the discussion would not be likely to profit us. It will be perhaps convenient for the sake of argument to assume that he did not know the full vice of all his Methods.

The Method of Agreement starts from the premises ABC $-def$,* AGH $-dij$, AKL $-dmn$: and its conclusion is that A is the cause of d. The principle it goes on is (as we saw before) that whatever is different in the different cases can be eliminated. And this principle is false, since a consequence, such as d, need not always follow from the same antecedent. The generalization is therefore vicious, and the Canon which regulates it is false. The axioms also, given in § 2 of the same eighth chapter, are no less false. To make them true you must qualify them by adding "in this one case." But that means you must destoy their generalizing power.

§ 13. The Method of Difference is no less vicious.† From the premises ABC $-def$, BC $-ef$, it goes to the conclusion that A is the cause or an indispensable part of the cause of d. But this conclusion is fatally unsound. A may be here a single factor in the production of d, the presence of which is quite accidental. The rule may be for d to be produced entirely without A, and for A to be present without producing d. The foundation of the Method ‡ "that whatever can not be eliminated, is connected with the phenomenon by a law" is quite false, unless we add to it "*in this one case*," and thereby make it ineffectual for the purpose of generalizing.

The Method of Joint Agreement and Difference is essen-

* I have *of course* altered Mill's lettering. If his letters *mean* anything, they involve a flagrant *petitio;* and if they do not, their suggestion must tend to confuse us.

† For further explanation see Book III. I. Chap. III. § 11, foll.

‡ There is no material difference between this and what is wrongly given, in the same § 3, as different, and as the ground of the Method of Agreement; for you have postulated a connection in your premises. I have given above the real ground of the Method of Agreement.

tially the same, and presents the same flaw. Its premises consist of ABC – *def*, AGH – *dij*, AKL – *dmn*, BC – *ef*, GH – *ij*, KL – *mn*. It infers from these the conclusion A – *d*. The mistake is the same as that which vitiated Difference. The right conclusion is that, *in these three cases*, A has gone to produce *d*.

In the Method of Residues the process is the same, and is bad for the same reason. From ABC – *def*, B – *f*, C – *e*, the Method goes on at once to A – *d*. But it could do so legitimately, only if it excluded the possibility of B or C, or both, having influenced, and been influenced by, A. Otherwise the conclusion like all the rest is vicious, and its Canon is false, unless qualified by the words "*in this one case*."

We come in the end to Concomitant Variations, and the principle of this has, I think, not been formulated with the desirable exactness. In the first place the words *whenever* in the Canon itself and *invariably* in the Axiom assigned to it are both ambiguous. If they mean that the groups of elements are causally connected, then this must rest upon a previous Method, and not upon mere facts. And in the second place, if we consider the process as a conclusion from these idealized premises, still it is impossible even then to demonstrate a result which will hold beyond this or that case (or cases). The premises appear to be $A^1BC - d^1ef$, $A^2BC - d^2ef$, $A^3BC - d^3ef$, and the conclusion arrived at seems to be A – *d*. We have apparently to eliminate *everything* but A – *d*, which is hence left as proved. But since once again the factors are not isolated, we have the old mistake of Difference once more. The conclusion which really follows is "*In this one case* (*or cases*) without A no *d*." Because the modification of A has altered the result, therefore A is relevant to *d* in *this* alteration, or series of alterations. I may add that no amount of instances and of "approximation" will suffice to *demonstrate logically*.

Should however finally the premises not have been so idealized as to be reducible to the formula we have given—if we really have nothing whatever to start with but a certain number of observed concomitances—then there literally is no conclusion at all, for the co-existence always *may* be mere chance coincidence. And, according as we understand the Canon and the Axiom, we must pronounce them to be either insufficient or false.

§ 14. I have shown that, if used in order to generalize beyond this or that individual instance as prepared for treatment, the Methods are vicious, and their Canons false. Their eliminative process will only show that the whole antecedent has been concerned in producing the whole consequent (cf. Book III.). The attempt to go further and, by isolating the factors, to transcend the limits of the premises supplied, we have seen has broken down at all points.

In the premises ABC – *def*, BC – *ef*, you are supposed to know that *def* is connected with ABC, and *ef* with BC: what you *not* yet know is if, in ABC, A is really a factor. For it might be irrelevant, and BC without it might produce *def*. But now, having BC – *ef*, and resting on the assumption which we call the Principle of Identity (Book I. Chap. V.), you are sure that, if BC – *ef* is once true, it will be true for ever. And you proceed from this to argue that BC – *def* must be false. For to produce *def* B must have been altered: and since in ABC – *def* the result is produced with no possible alteration except mere A, A there must be relevant to the presence of *def*. Hence A *in this case* (of ABC – *def*) must be, directly or indirectly, relevant to *d*. But you must not go further, and try in any way to specify the connection. For you can not do that without closing possibilities, and assuming something not given in your premises.*

And we must not forget that even this conclusion depends on our having assumed in the premises that, in ABC – *def*, *d* is not irrelevant. Unless we are perfectly sure beforehand that the whole *def* has been produced by ABC, we can not advance one single step. This shows once more how absurd it is to imagine that the Methods can be applied to particular facts. They depend entirely on such an artificial preparation of the material supplied, as has already reduced it to the form of an universal. It would be waste of time to dwell further on the detail of the Four (or Five) Methods, since the process in all is the same at bottom.†

* I should like here, and on the whole subject, to refer to Lotze's *Logik*, II. VII.

† I must refer to the following Book for an account of inference by way of Elimination.

§ 15. We have seen that the Methods are not "inductive," since they will not generalize beyond the given instance. They fail again of being "inductive," since they can not be applied to simple facts. They will not work unless they are supplied with universals. They presuppose in short as their own condition the result they profess alone to produce. Once more, the essence of their procedure is as much deductive as it is "inductive." The conclusion in some cases has less generality than some of the premises.

On any one of these grounds (and I hope on all of them) we may set down the Inductive Logic as a *fiasco*. And, if I am told that these flaws, or most of them, are already admitted by Inductive Logicians, I will not retract the word I have used. But to satisfy the objector I will give way so far as to write for *fiasco, confessed fiasco.*

§ 16. If it really is the case that the Methods are not sound; if it really is the case that the Canons are not true; if it really is the case that "induction" is *not proof*, and that he has all along known this, and been well aware of it—in that case I would suggest to the Inductive Logician that he has provoked a possible harsh remark. And however mistaken that harsh judgment might be, yet I can not help thinking that it would be better if *he* were to tell the public, what they certainly do not know, and the opposite of which his too large professions have led them to believe. But if, as I suppose, the Inductive Logician himself makes the mistake which his public has accepted—if, that is, while admitting that, like all things human, his Methods have "imperfections," he has no idea that, taken as proofs, they are radically vicious—in that case I will end by expressing the hope of a final agreement. By abridging claims that will not stand criticism, and by reforming the root and principle of his fabric, he will bring no ruin to the bulk of his edifice. Even if we confined ourselves to Mr. Mill's Logic, we should find that, when his so-called Four Inductive Methods were wholly removed, and his inference from mere particulars banished as a misunderstanding, the more valuable and even the larger part of his discussions on Science would remain untouched.

CHAPTER IV.

JEVONS' EQUATIONAL LOGIC.

§ 1. It is pleasant, after leaving the delusions of one's youth, to find oneself in contact with something like fact. The Equational Logic has proved by its results that it has a hold on the world of reality. What works must at least be partially right. And this new theory of logic does work. One may see that its method remains inapplicable to part of its subject. One may question its convenience in certain cases, and even doubt its formula in all. But one must believe so much as this. At the lowest estimate the new system will prove whatever the syllogism is able to prove. In some points it certainly is a far more rigid test of true reasoning. It deals very easily with many of those problems which accommodate themselves to numerical reasoning. And it maintains, on the ground both of reason and experience, that, in comparison with the syllogism, it is both easier to learn and harder to forget.

In writing this chapter on equational logic, as it appears in the theory of Professor Jevons, I wish I could do two things I can not do. I wish I could give an account of the doctrine intelligible to those who have no acquaintance with it. And I wish I could form something like an estimate of its educational value and practical powers. But both want of space and want of experience compel me to a narrower and less grateful task. The object of this chapter is to ask if that account of the reasoning process which has been offered us is strictly accurate, whether as a theory it is free from mistakes. An answer in the negative will be given to this question.

§ 2. We may divide the enquiry into three main parts. In the first (A) we shall ask if propositions are identities: in the second (B) if direct reasoning consists in substitution. In the

third (C) we shall discuss the Indirect Method, and with it the claims of the Logical Machine. It may prove convenient to state beforehand the main results which we expect to reach. We shall show in the first place (A) that, though every proposition does and must assert identity, yet that is not the *object* of all propositions. Our second conclusion (B) will be that substitution is not the real essence of reasoning, and that certain inferences will not by fair means come under this head. We shall show again that, although most arguments can be exhibited in the form of equations, yet the formula of inference which our author has given is not correct. In the third place (C) we shall argue that the Indirect Method, though perfectly valid, does not proceed by substitution: and finally we shall give our reasons for contesting a part of the claims put forth by the Machine. The reader is supposed to have made some acquaintance with the early part of *The Principles of Science.*

§ 3. (A) In asking if propositions are equations, we must remember that the sign of = does *not* mean *equal* (cf. *sup.* p. 24). It denotes sameness or identity. So that the word "equation," which we have chosen to start with, may at once be dismissed. The question is, Do judgments consist in the assertion of identity? This point has already come before us, and great part of what follows is repetition.

1. If we dismiss all theories and look simply at the facts, then to ask that question is to answer it in the negative. How can it be said that in "Cæsar is sick," or "This pond is frozen," or "Mammals are warm-blooded," we really mean to assert self-sameness? To say that, in making such statements as these, our real object is the denial of difference—that we wish to say, Although Cæsar is sick he still is Cæsar—is palpably absurd. We do not wish, premising the difference, to insist on the identity. The difference itself is the information which we wish to convey.

2. If all propositions asserted mere identity, then every proposition would have to be false. If A = B and B = BC, and we go from this to the conclusion A = C, then either B makes a difference to A or it makes no difference. In the one case the proposition becomes quite false, and in the other it disappears, since B = 0. How can it be true that ABC is

the same as A? Is BC nothing, then nothing is asserted. Is BC a difference, then how are they the same?

Partial identities are thus all false; but simple identities will fare no better. If " = " is taken to stand for "is the same as," then "A = B" can not possibly be true. If there is no difference, then nothing is said: if anything is said, then sameness is denied.

3. It is obvious, if we are to keep to identity, that subject and predicate must be wholly the same. AB = AB, ABC = ABC. But even here it is doubtful if we can stay. For even when we reach a tautologous statement we have still a difference in the position of the terms (cf. Book I. Chap. V.). If we wish to be consistent even that must go. We must take one side of our former reduplication; we must say, for instance, AB or ABC. In that, having given up our search for identity, we suddenly find the whole content of our assertion. Assume AB, then A is B. Assume ABC, then A is C. In our seeking to get an equational truth, we got all the differences together on each side. But the synthesis of these differents was just what we really wanted to assert. Strike out one side, and strike out the " =," and we have the content of the whole judgment.*

Assertion is not confined to the affirmation of sameness, and identity and equality are but one kind of predicate. If we use the language of the traditional logic, then in "S = P" the " = " has nothing to do with the copula: it falls entirely within the predicate, and "A = AB" is "A – = AB." If we wish to say that A is equal to or the same as B, the natural mode is, I think, to say that A and B are the same or equal. If we will not do that, and so openly admit the existence of difference, we must come in the end to "A = B," on the left hand side, is just the same as "A = B," on the right hand side. And since the sides are different even that is not true.

§ 4. The foregoing section merely asserts that a difference is affirmed by every proposition. Judgment can not be reduced to one-sided identification. In the attempt to reduce it we found that we got the whole matter of the judgment on each side of the copula. Thus in "sodium = sodium metal con-

* We are not dealing here with "simple identities." For them see § 6.

ducting electricity" the judgment falls on the right hand side. The assertion consists in the synthesis with sodium of the being a metal and conducting electricity; and when we know that, the "sodium" and the "=," of the subject and copula, are false or meaningless. You say that it makes no difference to sodium that it is a metal and conducts electricity. That surely is a rather odd method of saying that there is no difference whatever to make, and a still more eccentric method of implying that this makes all the difference to sodium.

§ 5. No proposition asserts *mere* identity, but without the statement or implication of identity no judgment can be made. The solution of this puzzle, which the end of the foregoing section hints at, is that sameness and difference imply one another, and are different sides of the self-same fact. Mere identity or difference is therefore unmeaning. And hence, although it is false that in judging we always mean to identify the subject and predicate, yet in every judgment an identity can be found. For where sameness is asserted difference is presupposed. Where difference is asserted there is a basis of sameness which underlies it. And it follows as a consequence that, if you do not mind your implications being put on a level with your meanings, you can show every judgment in the form of differences united by identity.

§ 6. For in every judgment the differences joined may be taken as the qualities of a single subject (cf. *sup.* p. 29, and p. 168). In "sodium = sodium metal" we assert that within the subject called sodium the attributes sodium and metal are conjoined; and if you please you may express this by saying, that, under the differences sodium and metal, there is yet no change from one subject to another. Again, in "Equilateral triangle = equiangular triangle" what I mean to say is that, despite these differences, you still have one and the same triangle, or again that, if one of these qualities exists, you will have the other in the self-same subject. Take again "The Pole Star = the slowest-moving star:" this means either that one star possesses these two differences, or that, in spite of these differences, the star is the same. In every case we have identity and diversity, and, though we accentuate one or the other, yet in every case both must co-exist.

I will illustrate the foregoing by other instances. Take "These fifteen statements are every one perjuries." The identical subject is here either each statement or the quality of perjury which appears in each. There are hence four meanings. In the first I assert that in every statement perjury must be added to its other qualities. In the second I deny that, though the statements are false, we have any right to abolish the perjury by making thirty statements out of fifteen. In the third I complain that a single crime has occurred with fifteen different sets of details. In the fourth I refuse to admit the diversity of the fifteen qualifications as any proof that the crime is not the same.

Or take the instance of equality or sameness itself. When I say that A and B are equal, I assert that in the differents A and B their quantity x is for all that the same. If I say "A and B are precisely the same," I must first take A and B as differenced by place or time or some other particular, and then against that assert their identity. The equality in one case and the sameness in the other may be treated as the subject in which A and B co-exist as attributes.

If the doctrine already put forward is true, there can be no such things as "simple identities." "Equiangular triangle = equilateral triangle" is false if it denies the difference of quality, or is false if it ignores the distinction of subjects. The identity it asserts must exist under differences. Thus among triangles the subject of equilateral is one and the same with the subject of equiangular. The natural way to state the fact is to say, The different subjects are the same, or The diverse qualities imply one another.

§ 7. The result of our enquiry as to propositions is not of good augury for the doctrine of Substitution. True we find that all subjects assert an identity, but then they no less assert a difference. Our sign " = " has turned out quite inapplicable. If S and P are made quite identical, the judgment disappears or falls only on one side. If again S and P are allowed to be different, the sign of identity asserts a falsehood. This so far is ominous. It is ominous again that every identity can be shown as the connection of attributes within a subject. And there is another omen we have not yet noticed. All judg-

ments, we long ago have found, can be understood as assertions of identity. But the class of relations in time and space, it appears, are not amenable to the Method of Substitution, or at least in public decline to appear so (cf. Book I. p. 24). I can not but think that with such auspices against it any cause must be lost.

§ 8. (B) We come now to the second branch of our subject. Does the process of reason consist in substitution? The foregoing has shown that this is not possible.

(1) The terms which we substitute must be the same: but if the same then you can not substitute. If your process does not give you a difference, it is no process. If it gives you a difference you have broken the identity. Thus if reasoning consists in substitution, its essence lies in the substitution of *differents*.

Let us take as an example, "A is equal to B, and B to C, and therefore A to C." It is impossible here by substitution of identicals to come to any conclusion whatever. For what is there identical? A is not the same as B, nor B as C, nor is "equal to B" the same as A. The identity really lies in the quantity of A, B, and C. The quantity of A and B is the same, and so is that of C and B. The quantity therefore of A and C is the same. But you can not show this by substitution. For in the *quantity* of each there is *no difference*. The terms are x A, x B, x C. Now if you substitute x A for x B, you substitute things which are not the same. But if you substitute mere x, you do nothing at all, for already you have the term x B. A is equal to B, but it is not the same. The quantity is the same, but it is one and not two.

The real process of the reasoning consists in connecting the differences A and C on the basis of their common identity x. It may also be stated as a substitution. Take x with any one of the differences, and substitute x with any other difference. The differences then found co-existing in x will be the conclusion which we require. But this substitution is a replacement by *differents*.

§ 9. (2) Substitution, so far as it works at all, is an indirect method of synthesizing differences. The rule is to substitute the "expression" for the term. But the "ex-

pression" is the judgment about the term. The rule then says "Substitute the judgment for the term." In other words, a term will not do; you must have a premise, and that means a judgment. You must leave your identity and get to differences.

In "sodium is metal and conducts electricity" (§ 4), sodium-metal takes the place of sodium, and metal gives way to metal-conductor, and we say this makes no difference to sodium, or sodium is the same with all this difference. But the real subject, which remains the same, is something which underlies these differences; and the real process is the addition of difference which developes the connection of attributes in this subject. It is entirely to mistake our object in view if, while we try to get the synthesis of diverse attributes, we talk as if all we wanted was to keep the identity of the subject. It is simply to stand the process on its head, if we make every step by uniting differences, and then speak as if throughout we had done nothing but remove them.

"Substitute for the terms their expressions," that is in other words *combine the premises*. It is an artificial way of performing the old task. For reasons which I can not here enter into, the artifice in some cases is very useful. But it is simply the syllogism turned upside down, and it is confined to the same insufficient limits.

§ 10. (3) The method of Substitution has set itself free from some of the superstitions of the traditional logic. For certain purposes it is far more useful. Everything again that can be proved by syllogism can also be proved by its modern rival. But on the other hand Substitution will prove nothing that can not be shown by syllogism. The limit of both is precisely the same. They are confined to the relation of subject and attribute and the connection of attributes within a subject; and beyond that category neither will work (cf. Part I. Chap. II. § 6).

To prove syllogistically that, because A and C are both equal to B, they are equal to one another, is quite impossible.* But it is just as impossible to prove the conclusion by

* "Quantity of A is the same as quantity of B, quantity of B is the same as quantity of C, and therefore quantity of A is quantity of C" will

substitution. The premises you have got are A = A equal to B, B = B equal to C; and the *quaternio terminorum* can only be avoided by taking the premises in a sense which is false.

It is needless to repeat against the equational logic the objections we have urged against the syllogism. If a logic will not deal with the syntheses of degree, of space, and of time; if even, as we shall see, its own Indirect Method falls outside its boundaries, then that logic does not give the true method of reasoning. It is not made too narrow because it requires an identity underlying the terms of its premises. It is made too narrow because in its conclusions it is confined to the category of subject and attribute. In a remarkable passage (*Principles*, Ed. II. p. 22) I understand Professor Jevons to admit these limitations. His logic, so far as it exists at present, appears to be confined to "simple relations." "A simple logical relation is that which exists between properties and circumstances of the same object or class." But, if that is so, then the theory of reasoning will cover only one portion of the facts.

§ 11. (4) We have seen that, within the syllogistic limits, equational logic will work very well; and we also have seen the nature of its process. However right it is to insist that in reasoning identity is necessary, yet exactly the same must be said of difference. And I can not think that, in laying down his principle of inference and in reducing it to a formula, Professor Jevons has avoided serious mistakes.

"So far as there exists sameness, identity or likeness, what is true of one thing will be true of the other." "In whatever relation a thing stands to a second thing, in the same relation it stands to the like or equivalent of that second thing" (pp. 9, 17).

Now if the "likeness" in these formulas means absence of difference, we see at once that they are tautologous or false.

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not do at all. If the quantity is taken in abstraction then it certainly is the same, but you can not show from that that A, B, and C are related as equals or related in any way. But if you take the quantity in its relations to A and B and C, in that case you have *quaternio terminorum*, or otherwise the premises become false. The relation of equality never could be got out in the conclusion.

For so far as *mere* identity exists, what is true of any one thing must for that very reason be false of another. If, in the case of A, B, and C, the judgment A–C is true of A so far as A is simply the same as B, then it either is not true of A at all, or else the differences have all disappeared, and the judgment becomes $x=x$. So again, if A is related to B, it is related to that which is the same as B. But "the same as B" will be simply B, and we have not advanced one single step.

§ 12. But if the formulas have another meaning, then what shall we say that their meaning is? They certainly can not mean that mere likeness will do. A need not be like C because both are like B. And it is obvious that if B and C are "equivalent," A need not stand in one relation to both. Two coins are equivalent and one is in my pocket, but neither logic nor fact makes me master of the other. It is clear that this can not be our author's meaning.

The equivalence or likeness, to be that which is meant, must exist to a sufficient extent or degree. But what is the degree which is sufficient? "The general test of equality is substitution" (*Principles*, p. 19). But here again our question is not answered. It would never do to say, you may substitute when you have a sufficient degree of likeness, and that degree again consists in your ability to make a substitution. And this is not what is meant. What I think is meant is that a certain amount of likeness will give conclusions, and that when you can substitute, you may know it is there. But I do not think that Professor Jevons has anywhere told us in what that degree itself consists.

§ 13. Still I think he has given us the materials for an answer. The question we have before us is this. Given a term B in relation with C; or otherwise, Given C as what is true of B, then what amount of sameness between A and B will warrant us in writing A for B? The first answer to be given is that no amount is wanted. There is not the very smallest need for A and B to be like or equivalent. But the second answer to be given is this: the sameness required is the sameness of the one subject. If A and B are both qualities of X, or again if B is a quality of A, then A and C will be interrelated. The quality of the subject is the middle

term, whose predicates in some way qualify the subject. Or the identity of the subject is the middle term and, so far as this identity extends, the attributes must all be related and conjoined.

We have finished our examination of the theory of propositions, and also of reasoning by substitution. We come now to a third and most important point, the question of the Indirect Method and the Logical Machine. I will anticipate briefly the result we shall reach. (*a*) The essence of the Indirect Method is a process which can not possibly be reduced to substitution. (*b*) In part of that process substitution may be used, but another form of reasoning is just as applicable. (*c*) The Machine will not really give complete conclusions. (*d*) It is improperly limited to one kind of reasoning.

§ 14. (C) (*a*) The Indirect Method is a process of exclusion. In using it you must first find all the possibilities, and then by removal of the rest you leave only one. In other words you have a disjunction, and remove all alternatives except a single remainder. *Because* the subject, if taken as real, must be taken as fully determined and particularized, *therefore* the remaining possibility is real (cf. Book I. Chap. IV.). A is *b*, *c*, or *d*: it is not *b* or *c*: it *therefore* is *d*. This is the essence of the Indirect Method, and we already have to some extent made its acquaintance.

§ 15. We know that this process falls outside syllogism. And from that we might argue at this stage of our enquiry that it can not be reduced to substitution. But if it can not be reduced to substitution, Professor Jevons' best work contradicts his theory. Let us see how he tries to avoid this consequence.

"The general rule is that from the denial of any of the alternatives the affirmation of the remainder can be inferred. Now this result clearly follows from our process of substitution; for if we have the proposition—

$$A = B \cdot|\cdot C \cdot|\cdot D,$$

and we insert this expression for A on one side of the self-evident identity

$$Ab = Ab,$$

we obtain $$Ab = ABb \cdot|\cdot AbC \cdot|\cdot AbD\ ;$$

and, as the first of the three alternatives is self-contradictory, we strike it out according to the law of contradiction; there remains

$$Ab = AbC \cdot|\cdot AbD.$$

Thus our system fully includes and explains that mood of the Disjunctive Syllogism technically called the *modus tollendo ponens*" (*Principles*, p. 77).*

But this, I think, will not stand a moment's examination. In the first place the operation of striking out one part and asserting the rest *is the essence of the method*, and yet it is not even in appearance reduced to substitution. In the second place in this example the reasoning by substitution is perfectly useless. It does not bring you one step on your way towards the conclusion.

I will take a perfectly simple instance. "A is *b* or *c*," and "A is not *b*." These are the premises, and from these I should say that you go directly to the conclusion "A is *c*." Professor Jevons, if I understand him rightly, contends that you go through a process of substitution. A = *b* or *c*, A = not-*b*. Insert the expression for A, "A is *b* or *c*," on one side of A not-*b* = A not-*b*. Then A not-*b*, = A not-*b* and *b* or A not-*b* and *c*. But A not-*b* and *b* = 0, therefore A not-*b* = 0 or not-*b* and *c*.

But surely, if words have any meaning, when I know that A is *b* or *c*, and that A is not *b*, I do know at once that *b* must be removed. And, on my removing *b* by an ideal experiment, *c* by itself is what I have left. If I please I may write this "*c* or 0." But I really can not perceive what advantage I get by turning in a circle to come back to my starting-place. A is *b* or *c*, and it is not *b*. If possible however let A be *b*. But, if it is *b*, it will be *b* and not-*b*. That is impossible, and therefore follows—what? Why simply that A is not *b*. I have used the premise to prove *itself*. And, if in answer I am told that this is not so, for I have enriched what was given me by the alternative "or 0," then it seems to me that I may fairly reply, If you do not know, given *only* *b* and *c*, that when *b* is gone, *c* is what is left behind; then how on earth can you tell that, given "*c* or 0," when 0

* I may remind the reader that ·|· here means "or," and *b* means "Not-B." I do not use these signs in the text.

is gone, *c* is all that is left? I confess to me one is no clearer than the other.

§ 16. What I think has occasioned this complete mistake is an erroneous idea as to indirect reasoning. For that we must have a disjunction to start with, and by removing one member we prove the other. And we *generally* have to use direct reasoning downwards. We assume as one of our premises that alternative which we want in the end to get rid of, and on this assumption we bring out a conclusion which contradicts something contained in the premises. This is the usual course, but it is not more than *usual*. Direct reasoning downwards is not *always* wanted. For when the premises themselves give the removal of one alternative, what more *can* we prove by such direct reasoning? We have in our hands not only the disjunction, but *also* the exclusion of one alternative. Where direct reasoning is required it is simply preliminary to the final operation, and is wanted merely to prepare the subject; and when the premises give the subject ready prepared, what is there which we possibly can have to wait for?

And I think this mistake is connected with another. I suspect that an error as to the Laws of Contradiction and Excluded Middle has helped to lead our author into this pitfall. But when we know that the Law of Excluded Middle is one case of disjunction, and in no sense the basis of it (Book I. p. 142), we see at once that no mystical force arises from the proof of a self-contradiction. If we get to that by turning in a circle, the end will hardly justify the means. It has no power to absolve our consciences from the ordinary sin of logical fallacy.

I must not be considered as wanting in respect, if I illustrate what I mean by another instance. Suppose that my premise is "A is *b*." Will any one deny that to prove from this that "A is *b*" is a frivolous circle? But it is easily done. For, if possible, suppose that A is not *b*; then A will be both *b* and not-*b*: or insert, on one side of the self-evident identity A not-*b* = A not-*b*, the expression for A. Then A not-*b* = A not-*b* and *b*. As one side of our equation is now self-contradictory, we strike it out according to the law of contradiction, and then there remains A not-*b* = 0, or A is *b*. I must be allowed

to state my conviction that this circle is the same as what we had above. In both cases alike the premise has been used to bring out nothing whatever but that which it gave.

The Indirect Method, we so far have seen, can not be reduced to a process of substitution.

§ 17. (*b*) If we consider that Method as employed by Professor Jevons, it does make use of the equational form, but there is no real necessity for its so doing. This process consists of the following four steps.

"1. By the Law of Duality develope the utmost number of alternatives which may exist in the description of the required class or term as regards the terms involved in the premises.

2. For each term in these alternatives substitute its description as given in the premises.

3. Strike out every alternative which is then found to break the Law of Contradiction.

4. The remaining terms may be equated to the term in question as the desired description" (*Principles*, pp. 89–90).

The one part of this process which employs substitution, we see, is the second. But it is performed just as well by the ordinary method. All the possible combinations of the terms are given us, and our object is merely by means of the premises to remove those combinations which the premises contradict. In what shape then ought we to have our premises? Surely one would say in the shape of combinations. It is just such combinations that the ordinary process would give us directly, and we get them by substitution in a roundabout way. For the "description" of the term is, as we saw, the judgment we make about the term. Hence this part of the method, as employed by Professor Jevons, is valid just so far as it can be stated syllogistically. For the premises are combinations of attributes. They are related, as Professor Jevons says, "just as the qualities of the same object" (*ibid.* p. 114); and if they were anything else, his method could not deal with them. We can combine them directly, if we please: and it is simply our choice, and perhaps sometimes our convenience, if we combine them from behind through their common subject.

Thus we *may* use substitution to prepare for our conclusion. But we can not use it to draw that conclusion. Its operation ends with the second step.

§ 18. We see, from examining the method itself, that it deals with syntheses or combinations, and does not deal at all with equations. And the method, as practically worked with the machine, confirms the truth of the view which we have taken. Professor Jevons himself with the greatest candour has called attention to this consideration.

"It is no doubt a remarkable fact that a simple identity can not be impressed upon the machine except in the form of two partial identities, and this may be thought by some logicians to militate against the equational mode of representing propositions" (*Principles*, 112).

It would be to me even more than remarkable if the machine *could* work with simple identities. But the fact, which Professor Jevons rightly finds remarkable, has I think a still more remarkable counterpart. The conclusions of the machine, if I understand them properly, contradict one another when read as equations in the sense of assertions of simple identity. A – B – C is consistent with Not-A – B – C; but how can we reconcile A = C with C = Not-A?

§ 19. (*c*) We come now to the subject of the Logical Machine, and we have to enquire what work it performs. Of the mechanism employed I have no knowledge. I am so incompetent to say anything about it, that I can not have the pleasure of congratulating Professor Jevons on what I must believe is no small achievement. But what the machine does perform is this. All the possible combinations of the terms are worked out, and are lying ready drawn up in the machine. The operator puts in at one end his premises, each in the shape of a combination. The combinations of these premises remove each one all the possibilities with which it is irreconcileable. And what comes out, so to speak, at the other end of the machine is all the residue of possible combinations which have not been so excluded by the premises. It is easy to exaggerate the powers of the machine. But I think it is impossible to deny that it executes such work, as must otherwise be done by a process of thinking. For myself I do

not hesitate to say that it performs mechanically an operation which, if performed ideally, would be an inference. And in this sense I think Professor Jevons is justified in his claim to have made a reasoning machine. Apart from the practical utility of the instrument, which in certain cases may be considerable, we must admit that, from a merely theoretical point of view, it is a most interesting and instructive phenomenon. If Professor Jevons had made no other contributions to logic, we might yet be sure that his name would go down with the history of the science.

But to say on the other hand that the machine will execute the whole process our minds perform in the inference—that the raw material goes in at one side, and the finished conclusion comes out at the other, would be travelling far beyond the fact. Before the premises can be worked on the instrument, thay have of course to be reduced and formulated, so as to take the shape of combinations of letters. But this is not the most important point. The result that comes out and is presented by the machine, is not really the conclusion. The process is not finished when the machinery stops; and the rest is left to be done by the mind. What is called "*reading*" the conclusion is to some extent *making* it.

§ 20. I will explain what I mean. In the machine is drawn up a complete disjunction of the possible arrangements of those terms which we employ. Before we begin to work the problem the machine thus supplies us with *one* of our premises. It states *all* possibilities, and this is its strength. But it states *mere* possibilities, and this is its weakness. We begin our operation, and insert the combinations which are given us by our *data*. These combinations are the *rest* of the premises. The machine, as it receives each combination, removes from the list of all the possibilities those which are inconsistent with this *datum*. Then the remainder of the possible combinations are exposed. But they still remain *bare* possibilities, and are never stated as actual facts.

The process may be taken as having five parts. 1. The complete disjunctive statement of possible combinations. This is given ready-made by the machine. 2. The reduction of the premises to the shape of combinations. This is done

entirely by the operator. 3. The discovery of those alternatives which are inconsistent with the combinations of the premises. This step is performed entirely by the machine. 4. The removal of those alternatives. This step again is performed by the machine, and it is the first part of that final inference which gives the conclusion. 5. The assertion that what is left is true, and that, if but one possibility remains, that is fact. This is absolutely necessary to complete the inference, and *this is done entirely by the operator.*

The final step may seem to some persons a final superfluity. But on that view of the nature of reasoning by way of the exclusion of alternatives which has seemed to me true, it is integral and essential. Yet it can not be said to be performed by the instrument.

§ 21. I wish to stand on this statement of the case. But it is possible to use also an *argumentum ad hominem.* If the too undiscriminating friends of the machine assert that its result is a categorical statement, they can hardly fail to compromise it deeply. They will make it an instrument for the production of falsehoods. Let us take one result that is given by the machine (*Principles*, 109).

A – B – C.	Not A – B – C.
Not A – not B – C.	Not A – not B – not C.

Now, there being here but *one* possibility, if A is assumed, we are *practically* safe in contending that the machine categorically asserts this one possibility. But suppose we take the same line throughout, we plunge at once into a sea of nonsense. Contradictory possibilities can co-exist as long as they remain mere possibilities, but the moment you affirm them as actual fact, they exclude one another. And, if so, either the machine brings out false conclusions, or *all* must be read as mere possibilities. You have no warrant from the machine for the assertion A *is* C. A *may be* C; and because it may be, and because there is nothing else that it may be, and because you know that it must be something to C one way or the other, *you* therefore *infer* that A *is* C, a conclusion not given to you by the machine.

§ 22. (*d*) The machine performs more than we have a

right to ask, and it is a pity to credit it with fictitious powers. We have seen that it does not bring out a conclusion. But it is limited beside in another respect. Although it does not work by substitution, yet its range is limited to that kind of inference which is possible in equational logic or in syllogism. It can not deal with any other combinations than those which represent the co-existence of qualities within a subject. And this is a very serious defect; for it means that the machine refuses to touch more than a part of the subject.

This is not the fault of the Indirect Method itself. Apart from restrictions artificially imposed on it, that is applicable everywhere and to all kinds of matter. If my premises are "A is to the right of B, and B of C," I may go directly from these to my conclusion; but, if I choose, I may use the indirect method. The possibilities of A with respect to C are either absence of any spatial relation, or A to the right of C, or to the left of C, or *neither* and above it, or below it, &c. But the premise "A to the right of B," will exclude (as we should see by an ideal construction) every alternative we can find other than A to the right of C. For, if we assumed any one of the others, we should bring out a result incompatible with our premise. The remaining possibility is therefore fact. This is perfectly familiar and common-place reasoning, and a system, in which it can find no place, must assuredly be called at least incomplete.

§ 23. The result of our perhaps too brief examination may be stated as follows :—

1. The Indirect Method has absolutely no vital connection with the Substitution of Similars.

2. That Method itself is flawless and complete, but as used by Professor Jevons it is improperly limited.

3. The machine which works within these limits will not actually give a categorical conclusion.

4. These unfortunate limits are also those of equational reasoning.

5. They coincide exactly with the boundary of the syllogism, and a large part of reasoning falls entirely without them.

6. The method of Substitution is syllogism upside down, and its principle has not been accurately formulated by Professor Jevons.

I must leave this subject with an expression of regret. I am sorry to have had no more space available; and I am sorry to have dwelt almost wholly on those points in which I am unable to follow the author. It would have been more pleasant, if it had been possible, to have called attention to the various merits of his logical work. But still, even if my praises could do him any service, fortunately he does not stand in need of them. I may end this chapter by expressing my belief, that no living Englishman has done one half the service to logic that Professor Jevons has done. No living writer, to the best of my knowledge, now Professor Lotze is dead, has done more. Personally to myself, and so far as my own studies are concerned, Professor Jevons' book has been of very great use; and I could not truly say that of any other English Logic. It is not inability to accept conclusions which prevents one learning. And there can not be any one who has left unread the *Principles of Science*, who has not something to learn from it.*

* Since this chapter was written Professor Jevons' lamented death has taken place, and has deprived me of any opportunity I might otherwise have had of learning from him in what points I have failed to understand his doctrines. I have thought it best to leave the chapter as it stood.

But there is another point on which the reader may look for some explanation. He may ask why I have failed to examine one of those views of Equational Logic which treat the subject mathematically. And I am compelled to throw the burden of the answer on those who had charge of my education, and who failed to give me the requisite instruction. It would have been otherwise a pleasure to have seen how the defects of the Equational theory appeared in a mathematical form. For, at the risk of seeming no less prejudiced than ignorant, I am forced to state the matter so. If I knew perhaps what Mathematics were, I should see how there is nothing special or limited about them, and how they are the soul of logic in general and (for all I know) of metaphysics too. Meanwhile I may suggest to the mathematical logician that, so long as he fails to treat (for example) such simple arguments as "A before B, and B with C, therefore A before C," he has no strict right to demand a hearing. Logic is not logic at all if its theory is based on a previous mutilation of the facts of the subject. It may do something which perhaps is very much better, but it does not give *any* account (adequate or inadequate) of reasoning in general. And at the risk of exhibiting prejudice once more, I may say that this consideration seems to me to be vital.

BOOK III.—PART I

INFERENCE CONTINUED.

CHAPTER I.

THE ENQUIRY REOPENED.

§ 1. In the Second Part of the foregoing Book we were concerned with negations. We were employed in banishing some views of inference which appeared erroneous. From this negative process we turn with relief, and with the hope of rest in a positive result. But we must not deceive ourselves. The positive result we have already reached, offers a welcome in part illusive, and a rest that is doomed to speedy disturbance. We saw in all inference an ideal synthesis, which united round a centre or centres of identity not less than two terms into one construction. The conclusion was then a new relation of these terms, and it was by an intuition that we perceived it to exist within the individual whole we had compacted. And this account that we gave was not a false account, for it was true of those inferences to which we applied ourselves. But there are other reasonings no less important, which we then ignored, and which fall beyond it. It was thus a theory provisional and limited in range.

§ 2. And there came a point where we had to transcend it. In negative inference we were forced to contemplate the possibility of retaining the middle (Book II. Part I. V. § 8). If, our construction being reached, we choose to rest in it, if we refuse to isolate a single relation within that whole, if we prefer to treat the entire compound synthesis as the conclusion we want, are we logically wrong? Is there any law which orders us to eliminate, and, where we can not eliminate,

forbids us to argue? The question once asked is its own reply, and it rings the knell of a blind superstition which vanishes in daylight.

If so, we have been forced beyond our formula. For the conclusion is not always a new relation of the extremes; it may be merely that interrelation of the whole which does not permit the ideal separation of a new relation. And, having gone so far, we are led to go farther. If, the synthesis being made, we do not always go on to get from that a fresh relation, if we sometimes rest in the whole we have constructed, why not sometimes again do something else? Why not try a new exit? There are other things in the world besides relations; we all know there are qualities, and a whole put together may surely, if not always at least sometimes, develope new qualities. If then by construction we can get to a quality, and not to a relation, once more we shall have passed from the limit of our formula.

§ 3. The next Chapter will show that this kind of inference really exists, but at present we must follow the lead of those doubts which it tends to awaken. If our formula is not wide enough, and if we framed it to suit the facts we had before us, it is natural to suspect those facts we trusted in. Are they complete? Are there not other inferences, which we failed to consider, and which, if we considered them, would affect the result? And this question once asked leads to consequences we hid. Though we widened our facts beyond the boundary of the traditional logic, we stopped short of the truth. We desired to inveigle by doubtful promises, and commit the reader to a voyage he could not easily be quit of. We are now at sea where alarm brings no risk, and we may avow the truth that, in our former account, we left out a very great part of the subject. There are large branches of reasoning which we deliberately ignored, and which explode the formula we went on to set up. The following Chapter will detail their nature, and we may content ourselves here with a brief enumeration.

§ 4. Our education in logical superstition leads us first to think of Immediate Inferences. Are they provided for? The syllogism itself perhaps failed to provide for them, but

the failure of the syllogism can not be our excuse. No doubt we might appropriate the doctrines advanced by some enemies of tradition, and reply that the so-called Immediate Inferences are not inferences at all, and that we are not required to provide specially for illusions. But I do not think that this answer will hold. If some immediate inferences seem to be tautologies, yet others are more stubborn. They appear to get to a fresh result, and they certainly do not seem to move in accord with our formula.

§ 5. We have now begun the list of our difficulties, and it does not much matter how we proceed with it. We may take up next the operations of Arithmetic. Addition and subtraction seem processes of reasoning, but they scarcely can be said to present a new relation of extremes existing by virtue of relation to a middle. So too with Geometry: when I prove equality by ideal superposition, is this no reasoning and no kind of inference? On the other hand does it show that terms are related because of a common relation to a third term? However in the end we may answer this question, it certainly seems to suggest a problem which we took no account of. Our formula once more perhaps is not adequate.

§ 6. Then come other difficulties. When A is given us, and we are able to find two further possibilities, A*b* and A*c*, and when again some other knowledge assures us that A*c* is not real—on this we assume that A*b* is fact. We seem here to reason, and to reason with at least a show of correctness, but the form of our inference is not provided for. Even if we assume that it can be reduced to the type we have acknowledged, the reduction is at least a task we have not yet taken in hand. And the reduction may possibly prove not practicable.

§ 7. We are not at an end. When an object AB is recognized as C, the C is added by ideal supplement, and we seem to have a genuine inference. But this inference has not got the premises we required. In the cases which we considered the premises were *data*, but we see here no *datum* beyond the perception. This is once more a ground for amending our formula. And then again we seem to find yet another

ground in the hypothetic judgment. Imagine A, and perhaps nothing follows: but suppose A real, and we may then seem compelled to get A–B. This operation suggests enquiry, and it leads us to think of yet another trouble. In the method of Dialectic a result is got by an ideal operation, which hardly consists in the act of putting terms together. Now it may be said that the method is a pure illusion, but that short way would perhaps prove long in the end, and would lead to enquiries not easy to dispose of. It is better in the interest of logic to ask under what type of reasoning this method will fall; a question which once more may cause a strain in the fabric of our formula.

§ 8. If ideal operations which lead to fresh judgments all claim to be inferences—and this claim, we may be sure, will now be set up—we shall have to consider some other questions which we before ignored. Take first Abstraction; here an operation of analysis is performed on some *datum*, and in conclusion a judgment is got which is concerned with one element of the original whole. Is this judgment which we thus have reached a conclusion? And, if it is a conclusion, will the reasoning fall under the type which we recognize? There is matter here for doubt and discussion, and the discussion seems likely to carry us further. For in Comparison and Distinction we get to results, and and we get to them by an ideal experiment. Is that experiment inference? If so, we once more are asked to what type the inference conforms. We may already and by anticipation have provided a place for it, but appearances, I confess, are much against us. We can not off hand dismiss the claim set up by these processes, and we can not easily bring them under our formula.

§ 9. It is clear that our hope, if we had any hope, of a speedy termination, must now be relinquished. We must prepare ourselves to reopen our enquiry as to the general nature of the reasoning process. The next Chapter must go through the mental operations we have here enumerated. It will ask first if they really are inferences, and will next discuss the peculiar nature of each. From this basis we may hope to arrive in the end at some positive result.

CHAPTER II.

FRESH SPECIMENS OF INFERENCE.

§ 1. In the preceding Book we possessed an advantage we no longer enjoy. Those examples of reasoning, upon which we worked, were too clear to be doubted. No unprejudiced mind could deny the fact of their being inferences, and the issue was confined to the question of their principle and inner nature. But at the point which we have reached, doubt is possible on all sides. Not only will the character of the specimens we produce be matter of debate, but their claim to be specimens will be disallowed. We must ask not merely, To what kind of inferences do they belong, but, Are they really inferences at all?

With this prospect in sight a preliminary reflection, before we argue, seems likely to be useful. What test shall we apply, when any claim to inference is sent in? Where the facts are not palpable it will clearly be a gain if we are able to agree to an explicit Canon, for we then shall have something to which we can appeal in the course of the discussion.

§ 2. We may say that inference is the same as reasoning, that to reason without inferring, or to infer without reasoning, does not sound possible. But when do we reason? Do we always reason when a judgment is given as a judgment for which we have a reason? If that reason were taken as a fact merely got by simple perception, then this question would probably be answered in the negative. But suppose our reason is no fact of sense, but is another judgment; not something that exists but some knowledge that we have of it—the answer surely will in that case be different. We should be said to reason where a truth is given as a reason for belief in another truth. In other words where, instead of affirming that S *is* P, we say S *must be* P, wherever we have a *necessary* truth, there

is reasoning and inference. We apply the same test in a different form when we turn to the use of "why" and "because." If these have a sense, if it is possible to ask Why, and then to answer Because, in all such cases we seem to have an actual inference. There is judgment as to which a doubt can be raised, and that doubt is satisfied, not by pointing to a fact, but by reference to a truth. There is a mental operation, in which a result is seen to follow from an ideal *datum*. And we may agree that wherever this mark exists, an inference is present.

§ 3. And there is another mark which perhaps we may use. Where illusion exists it seems to arise from mistaken inference; for the senses are infallible because they do not reason, and fallacy can come from nothing but inferring. If this is true, then possibility of error means presence of inference, and we may employ the first as a test of the second. But we are treading here upon dangerous ground. It may be denied that, when water is hot to one hand and cold to the other, the mistake that exists is a fallacy of inference; and the denial could not well be discussed in these pages. We can not assume that in every case where error is possible, reasoning exists, and so we are disappointed in our canon; but for all that we have an admitted indication. It will be agreed that, where we discover mistake, we shall not be wrong in looking for inference, and that, to some extent at least, we may expect to find it.

§ 4. Armed with this understanding we may begin at once, and may take up the claims which our first Chapter found were demanding a scrutiny. They make no pretence to exhaust the array of possible applicants, and they enter in no systematic order. Still we hope, and believe, that the worst has shown itself, and we at least do not know of more terrors in the background.

(A) The first to come in are the three-term constructions; (i) those where elision is simply not used, and (ii) those operations where we also go to a quality. What reply shall we make to each of these?

(i) I cannot think of any way by which to escape the claim of the first. If A is given to the right of B, and B again to

the right of C, and I therefore judge that the terms are arranged as C – B – A, this is clearly an inference. I did not know it before, and I get it by putting two truths together. And if this is not an inference, why is it an inference when I go to C – A? No answer can be given; we are forced to admit that C – B – A is inferred; and yet it is not an inference according to our formula.

§ 5. (ii) But there follows close a further consequence. We have reasoned to a whole C – B – A, and this whole may have a new quality x. But, if so, we have reasoned from terms in relation, C – B and B – A, to no new relation but to the presence of a fresh quality; and hence once more our formula has broken down.

A friend of our youth may be called upon here to supply us with an instance. I sail round land, and reconstruct my course by a synthetic process, and the whole shore that I combine is then interpreted as belonging to an island. A – B, B – C, C – D, D – F, F – H become, when united,

; and from this circular frontage I go to the name and to the other qualities possessed by islands. I may be told in reply that the name and the qualities, if indeed there are such, do not come directly from the construction itself, but are got by a further and additional premise that does not appear. And this, I admit, is true altogether of the name, and true in part of the other qualities. But it still leaves something which comes from the construction, and which comes directly. The circular shape and self-contained singleness are more than the mere interrelation of the premises, and need not be got from previous knowledge of islands. You do not go outside the construction to get them, the whole would not be itself without them; and yet they are another side of that whole, which is distinct from the putting together of the parts. But, if so, surely you have reasoned to a quality.

At some time, I presume, we have all been visited with the pleasing pain of hanging our pictures and arranging our furniture. How many combinations were we forced to reject,

until we came upon one which would do. But these attempts were all inferences from hypothetical *data*, and we went from the construction direct to a quality, and so to a judgment. If the quality was æsthetic that made no difference; for we did not say of the whole psychological image, That now hurts me, or gives me a pleasant sensation. We said of the content, which we had in the premises, That leads and must lead to a certain result. And this was an inference, which certainly fell outside our formula.

It is clear, I think, that when trying experiments in the actual world by combining and dividing real things, or by drawing upon paper, we may be surprised by qualities which we did not anticipate. And the same must be true of ideal experiment. In both cases, the interrelation being given, we perceive a quality which comes from that, and which is more than and beyond the bare interrelation. But in the second case the construction, being got by an ideal process, is itself an inference, and its result is also nothing but a conclusion. But it is not any fresh relation of the original *data*; it is an issuing quality.

§ 6. It seems clear that reasoning does not always give us a new relation of the terms we began with. Our formula has now too palpably lost its virtue; and virtue being gone, we may proceed less anxiously. The advances of those more audacious claimants, who showed their heads in the foregoing Chapter, may be calmly received. There is no longer any absolute presumption against them, and the reception of each is a matter not of principle, but of choice and convenience.

(B) In this spirit we may meet the approaches of Arithmetic, the claim of which I will bring in indirectly. An introduction is certainly not required, but it may serve to make the change less startling.

We saw long ago that, when spatial relations with points of identity were forced on our attention, we could put them together and find a new relation. We have lately seen that, instead of a relation, these premises could supply us with an unknown quality. Given lines A – B, B – C, C – A, we can construct $\overset{A}{B\!\!\triangle\!\!C}$, and from that construction get the quality

possessed by a certain triangle. In this case the conclusion is categorical and necessary.

But there was something else which we hardly glanced at. We may have three lines such as A – B, C – D, E – F. In these, as they are given us, there are no points marked identical, and we have no given reason for putting them together. But we may do so if we choose; if their lengths do not forbid it, we may arrange them ideally, combining them into the form of a triangle, and thus endowing them with a certain quality. We have here an intuition which follows on a synthesis, and the doubt which arises is, Have we an inference?

If we have one what is it? It is not "AB, CD, EF have *x*." That would be false, since they *are* not combined, and since they *have* not together any quality at all. And again the inference can not run thus, "AB, CD, EF, when their terminal points *are* identified, have *x*." That certainly is true, but then it is not an inference. For, though the quality is perceived in an ideal arrangement, it has not been got by it. The combination in this case would not be such a construction as was *made* to get the judgment, and therefore connects the judgment with the original *data*. The judgment is passed on a whole that is *found*, and it says nothing about the ideal composition of that whole. And for this reason it can not be a *conclusion*.

The real conclusion is "AB, CD, EF may be combined, and when combined they have a quality *x*," or "If AB, CD, EF are manipulated in a certain way, they give rise to *x*." The lines *plus* my arranging activity are the premises, and the construction with its quality follows.

This has all the marks of inference, but it obviously differs from the inference we got from A – B, B – C, C – A. In this case the construction follows from the *data* themselves, but in the other example it does not follow, unless an arbitrary arrangement of my own is added. My free manipulation has taken the place of the compulsory synthesis through identity of the terminal points B, C, A. The lines *need* not have any point that is identical, and I am not *obliged* to put them together. The premises are hypothetical, and the conclusion is thus arbitrary. But it still is an inference, for if

the lines are combined, then the quality must come *because* they are combined.

§ 7. This foregoing section has been no digression, for we may consider both addition and subtraction as cases of the process we have just sketched. Let us clear our ideas by asking what we mean by the simple proposition "Twice one is two." Do we mean to assert that one unit and another unit *are* the integer two? Such a statement would be false, for the integer is more than one unit considered along with another unit. There is a quality in the whole, which belongs to the units first when combined and made into an integer. It is false then that "one and one *are* two." They *make* two, but do not make it unless I put them together; and I need not do so unless I happen to choose. The result is thus hypothetical and arbitrary.

§ 8. There is a mistake we must correct before we proceed. The reader may (or may not) be aware, that the logical and temporal relation which exists between degree and quantity is a difficult subject. It is a question that could not be fully discussed in a narrow compass, and on which we can offer but a brief observation. You may use "degree" in more than one sense. You may understand by the term a scale of qualities which are related explicitly to a scale of quantities, and which depend on this scale. Or again you may mean a scale of differences, which are simply felt as more or less of a certain thing, but which are not referred to any scale of numbers of units. If we adopt the former sense of degree, then both in time and logically the knowledge of number, or the power of counting, precedes the knowledge of that scale of intensities which stands in explicit relation to the varying units. Quantity here will precede degree. But, if we use the latter meaning and understand by degree the mere vague sense of a more and a less, of a rise and a fall, a swelling and a shrinking, then without any doubt degree comes first and quantity follows.

The mistake we referred to springs partly from the neglect of these metaphysical abstractions, and partly from blindness to palpable facts. It is assumed, that the perception of differences in quantity implies the power of counting units.

There is a well-known tale, not worth repeating, of the experiment which proves that a magpie can count up to two or three, but not any further. Thus if three men go in and but two come out, the bird knows that all have not been accounted for, and therefore it counts. But if so, and if the power to perceive the difference of more food and less food, a larger beast and a smaller beast, demonstrate counting, few animals will *not* count. If again the ability to distinguish part from the whole, and, when but part appears, to expect the rest, shows the practice of arithmetic—then the higher animals are all arithmeticians, and all habitually add and subtract. This perhaps may not seem a *reductio ad absurdum*, but then this is not all. Though the higher (and even lower) animals can all count, there are races of men who can hardly count at all, and are only beginning in the rudest way. But these very savages, who are staggered by the difference between three and four, and are thus led into errors which would never occur to an average dog—on the other hand count much better than we could. Take one from a flock of forty sheep, and in a moment they perceive the difference. They have finished counting before we could have begun. And on this view of the subject I think it is clear that there is something unexplained.

The mistake lies in the failure to see that number, in the proper sense, is a late product of abstraction, and that, long before this could come into the world, the perception of more and less, of the whole and the parts, already existed. They existed in an unanalyzed *qualitative* form.

§ 9. Now this observation has important consequences, for it points to the conclusion that, in considering number, we have no right to strike out the qualitative side. If the confused feeling of difference in degree between wholes came first, and these wholes were then afterwards analyzed into parts, and these parts were then once again reduced to equivalent units—if this was the psychological process, as I think we may agree it clearly must have been—then I venture to argue that this shows we are wrong, if we take quantities to consist in nothing but units, somehow taken together and barely co-existing. Even when we get down to abstract

number, each integer must be more than units and units. As an integer it will have an additional quality which results from addition and disappears on subtraction. One and one are not the same as two, two and two are not the same as four, nor are they the same as three and one. For integers are individuals; each has an unity which makes it a whole, and joins together its units by a higher bond than mere co-existence before the attention. If that bond is a residuum of spatial perception or comes from elsewhere, we need not here consider. Enough that it exists, that each integer is one whole, with qualitative relations of higher and lower persisting between it and other integers. Hence we may say that mere counting *is* not the integers; it does but *make* them. It progressively produces and destroys them as it goes up and down the scale.

The integer then is different from its units. To say of the units that they *are* the integer, is not a tautology but a downright false statement. That they *become* the integer, on the other hand is true and is not a tautology.

§ 10. Addition and subtraction produce new results; they are ideal operations which give conclusions, and justify what they give; they are palpable inferences. The reasoning which they employ no doubt may be very simple in its nature and very easy to disparage. "It is the work of a machine," we may hear the reproach, "and not of a brain." But if, starting from certain *data*, it is a brain that by means of ideal experiment procures a fresh judgment, we must call this reasoning; for we do not know what else we can call it. And the reproach, we must add, betrays a prejudice that is not philosophical.

The operation is the analogue of that arbitrary arrangement in ideal space which we mentioned above (§ 6). We start with the units one and one, we freely rearrange them, and we end with the result of integer two. But the result is hypothetical, for we can not say, one and one *must* give two. They *may* be arranged in such a way that two must appear, or, if I choose to manipulate one and one, then two comes out. Hence there is nothing categorical. One and one, if I leave them alone, are one and one. I may handle them or not at

my private pleasure, and when I handle them, I need not add them. They do not necessitate their own addition, it is only when I add them that necessity appears. But *then* they must become two, and I have made an inference.

This is still more patent if we consider subtraction. We might say "Three is one," or "The integer three is one of its units;" and of course such a proposition would be false. But the integer turns of necessity to one unit, when I first break it up and then set aside two of its component parts. Three, if two be subtracted, is obviously one; but this result is hypothetical. We are not obliged to analyze the *datum* and to set part on one side; and we are in no way compelled to get the conclusion unless we have taken this arbitrary step.

§ 11. These inferences, it is clear, will not come under the formula we set up. They suit it no better than did that ideal arrangement of wholes in space, which gave a new quality. But we need not dwell on this point, for there is something which presses for more serious attention. "The above account," it may fairly be said, "is not a right view of addition and subtraction, for these give a conclusion which is true categorically. Arithmetical judgments are in no sense arbitrary, nor, given the *data*, is the inference conditional. Bricks and mortar, if the builder choose, may make a house; but one and one *are* equal to two, whether we choose or do not choose to have it so." I admit the distinction and desire to endorse it, but it is in no sense contrary to the statement we have made; for, up to this time, we have never said a word about *equality*. What we wanted was to emphasize a side of arithmetical processes, which, if neglected, makes them obscure or tautologous; and, whatever else is right, it still remains true that addition is an inference of the kind we described. It does prove hypothetically that, if units are added, they *become* something different; and for the right understanding of the subject this truth is all important.

Having made this clear, we may now proceed to regard the process from a different side, and to consider it as a categorical proof of equality in difference.

§ 12. What is equality? It is certainly not the same as mere identity, nor would it be safe for any one except a

"powerful thinker" to be guilty of such elementary confusion. Because things are the same they need not be equal; and when they are equal, they need not be the same in more than one aspect. Equality is sameness in respect of quantity, it is a relation between things that may otherwise be different, but are identical in regard to their number of units. Or, more accurately, we may call it the identity of the units, as units, in two different things. This definition certainly gives rise to problems which in another place I should be glad to discuss; but for present purposes it will be found sufficient. One and one are equal to two because the mere units in both are the same, and three *minus* two is equal to one because on both sides the unit is identical.

This result is true, and it seems categorical, and we therefore are led to ask once more how we reach the result. If the conclusion is *not* hypothetical, were we right in taking the operation to be arbitrary? Yet, on the other hand, how do I know that one and one are equal to two? I know it because when I add the units, they *become* two, and when I analyze two it *becomes* the units. I thus see the identity of the units throughout, but I see it in consequence of a free manipulation which I might have omitted. So again in subtraction I infer that $3-2=1$. But how do I reach this? I break up the three into three separate units; I break up the two in the selfsame manner, and, removing it, I perceive that two units of the three have been removed. One is left, and that as an unit is precisely the same as any other one. The conclusion is necessary, but the operation is optional, for there was nothing which demanded my analysis and comparison. The result has thus depended on my arbitrary choice.

§ 13. We seem left with this difficulty—the result is unconditional, though the process on which it depends is arbitrary. And this difficulty for the present must be simply accepted. We are indeed only too ready to accept it or ignore it. The operation in arithmetic, which gives the result, is supposed to have no influence upon it; there is a postulate that, so long as you do not alter the number of the units, you may do what you please with them, and whatever you bring out is unconditionally true. The process is a mere prepara-

tion of the *data*, and it demonstrates an element which already was there. It is not an arbitrary alteration of my own, since it does not alter the element at all; it constructs no artificial and novel spectacle, it does but remove an obstacle to my vision.

In other words the relation of equality between any quantities is supposed to *exist*, and the judgment which expresses it is supposed to have independent validity. Whether I see it or not, it is taken to be true, and the way in which I get to it affects it in no way. Thus my inferring is optional and entirely arbitrary—but the inference itself is eternal truth. It is my process from a *datum* which enables me to see what is true of that *datum*, yet it is only my insight, and it is not the truth, which depends on that process. One and one = two, not because I add them, but because they *are* equal.

§ 14. The general relation of the ground of knowledge to the ground of reality will vex us hereafter, and we will not anticipate; for our present task is simply to find the process which is used. It consists, as we have seen, in a free re-arrangement, resulting in a perception of quantitative identity, which is taken as true independent of the process. The new result, which is got by experiment with the units, is held valid of those units apart from the experiment. And we do not propose in the present chapter to question this result; but, the process being such, our wish is to know if it really is an inference, and again if it will come under the formula which we first accepted but now hold suspect.

That it really is inference we can not long doubt. We might indeed dispute for ever about "twice one is two;" for, when a product has been learnt before it was understood, and now comes to the mind as so ready-made, self-apparent, and obvious, it is hard to see that it ever has been a painful inference, a slow result of time for which ages had to wait. But more complex instances soon convict us of our error. The moment we desert the table we have learnt, we find there is a process which proves the result, and in which mistakes are only too easy. And this process is the movement of an ideal experiment which gives a judgment we had not got

before. But, unless we have somehow apart from the facts decided in our minds what reasoning is to be, then this must be reasoning and its result must be an inference.

But is it an inference according to our formula? That at least it can not be, for it establishes no relation between the terms of the premises. On the contrary the relation, which appears in the conclusion, has one terminal point which never appeared in the *data* at all. Our poor formula at this rate will hardly be able to claim respectful treatment in the future, and what presumption there is seems against its virtue.

§ 15. Spaces and times admit of treatment by a similar process. If an optional arrangement of superposition, division into parts, or construction into a whole by arbitrary additions, results in relations of equality or inequality, this result is taken as a categorical conclusion. The alterations which we introduce do not alter the fact as long as they do not alter the magnitude and it is a postulate that no change of place or context, no analysis or synthesis, can make any difference to the relations of quantity. The operations (we assume) are external to the *data* themselves; the work done upon them is really work that falls outside them, and that but renders them apparent as they were before. The truth is shown to us by a process which does not give the reason why the thing actually *is* so. The demonstration removes a barrier from our sight, or provides us with artificial vision, but it does not produce the fact from its elements.

Yet we can not doubt that here once more we have an inference; an inference again which we have failed to provide for, since it can not be reduced to interrelation. When I show, for instance, by superposition that one triangle is equal to another, what third term is it that connects the couple, or what syllogism will express the actual process? I know that an application of reckless torture will reduce anything you please to any possible form; but the fact remains otherwise. We have here an intuition of comparison, taking place by means of free ideal rearrangement. This is an inference, and it is a new kind of inference.

§ 16. (C) And new itself it suggests fresh innovation, for it leads us to ask if *comparison* is reasoning, and if, whenever

we compare, we may be said to infer. The suggestion is contrary to our established ideas, but how can we repulse it? We start from *data*, we subject these *data* to an ideal process, and we get a new truth about these *data*. The new truth, so far as our knowing it is concerned, depends on the operation, is because of it, and would not be unless for that reason; but if so, we surely must call it a conclusion.

Take an instance; we have ABC, DBF, and we may not know that they are the same in any point. We then inspect them with a desire to discover sameness, general or special; that is we attend to them from a certain point of view. We compare them in respect of identity, either in quality or quantity or again in some more special developement. No doubt it is not easy to lay down the precise character of the process employed, but there certainly is some process. There is an ideal operation on ABC, DBF, and that operation presents us with a judgment. We did not know that ABC, DBF were alike, now we know that they possess the point B in common, and this intuition depends on the operation. The conclusion runs "If ABC, DBF are compared they are alike in B;" and, since the operation is assumed to make no difference to the fact, we may say categorically, "The two *are* alike." No doubt we may question the validity of this inference, but I do not see how we can deny its existence. On the other hand it is not a relation between two given terms that is seen in a construction through identity.

We shall perhaps not be wrong to place under this head the copulative process "A is C, B is C, and *therefore* both are C." So far as this connects, and does not barely conjoin, it concludes to an identity between A and B.

§ 17. And what holds of the comparison which establishes identity, must hold too of the process which brings out difference. If distinction is an ideal operation which demonstrates new truth, that is truth new *to us*, then so far it must be reasoning. We may illustrate simply; what is really $B^1B^2B^3$ has been taken throughout as simply B. We subject this *datum* B to an ideal process, the nature of which we do not at present discuss, and the result is $B^1B^2B^3$. Now since the

operation is arbitrary the product is hypothetical, but because once again the operation is assumed not to alter the *datum*, as it really is—we take the product as categorical. The marks have been found, and therefore they are. True there is no distinction unless things are first different; but for us there can be no difference which does not follow on distinction. It becomes apparent and is shown to exist by virtue of a process, which must therefore be taken as a demonstration and a genuine inference.

A difficulty, we admit, besets the operations of distinction and identification; for they do not, it may be said, give the actual reason of the real truth in which we are finally landed. Nay they do not even profess to give it, and we may say that they even protest above all things that they demonstrate nothing that was not there without them. This difficulty, which has bearings we perhaps do not suspect, will engage us hereafter. But for our present purpose we must insist on the other side of the process. We have reached a result by ideal experiment; and of this we can say, Though it be not *made* true by our operation, yet we *know* it for that reason, and it is *for us* because of *our* activity. But, if so, then once again we have reasoned.

§ 18. (D) It would seem that we may reason, though we do not give the reason of the fact itself, and when our demonstration less establishes than recognizes. Mere consistency now prompts us to raise the doubt if *recognition* is not always reasoning. And perhaps to our surprise we discover that this is really the case, for to find that AB is C, and to recognize it as such, implies a process of ideal redintegration. I start with AB, and the function of ideal synthesis BC supplies the construction from which I proceed. Even where I merely recall the name, or where I can but say that somewhere I must have seen that face before, there is still a conclusion. The connection may be dim and the element that is added may be trifling or obscure; but whatever it is, we get it by a synthetic process of restoration, and this is reasoning.

"Yes, reasoning," I may be told, "but normal reasoning and with the usual three terms. First AB and BC, then a whole ABC, and an elision leaving the result A – C." But, I

answer, in what sense is BC a premise? It is by no means an original *datum*. Indeed it is not a *datum* at all; for it is a function which does not come before the mind, but which presents the result of its action on the only *datum* that we possess. If BC is a premise, it is a premise in no usual sense of the term. We have at any rate found a case that has not been yet provided for, and a case where the inference seems quite indisputable.

We may add to this section a remark on the hypothetical judgment. This is always an inference. I do not simply mean that it is an inference, when we first say, "If anything is B it is C, but here A is B, and therefore it is C." The inference I mean is one which dispenses with the explicit statement of the general principle. A is merely supposed; it is offered in experiment as an attribute of reality, and from this we go on to arrive at C without any other premise which comes before the mind. This process is, I think, an inference of a kind we did not anticipate; but it hardly can claim an independent position. Where it does not fall under the foregoing head of Recognition, it will find its place in the ensuing section.

§ 19. (E) The subject of this section is forced upon us. I should be very glad in a work of this kind to say nothing about the Dialectic Method, but I can find no excuse for passing it over, for it is irresistibly suggested by the inference which we had to notice last. I am far from implying that the Method falls under the previous section, and that it is a mere process of recognition. Such a view, if adopted, would annihilate its claims, and my object is here not to criticize or to advocate. I wish simply to consider what sort of operation is performed by Dialectic, assuming that it has a real way of its own.

If we make that assumption, we pass naturally from the process of Recognition on to the Dialectic movement. Like recognition this starts from a single *datum*, and without the help of any other premise it brings out a fresh result. Yet the result is not got by mere analysis of the starting-point, but is got by the action of a mental function which extends the *datum* through an ideal synthesis. So far the method of

Dialectic is precisely the same as the common recognition which works by means of redintegration. But now comes a difference; the ideal synthesis, which in Dialectic meets and supplements the starting-point, is not reproduction from past perception; or rather, and to speak more correctly, it is not *merely* such ideal reproduction. Even though the synthesis which it brings into play does repeat a connection we have got from presentation, there still is more than bare repetition. The function is felt not as what the mind does because it has thus been trained to perform: the naturalness seems more than the ease of habit, and the necessity above any *vis inertiæ*. And the cause of the difference we find is this; the message in the one case seems external tidings which are so believed, since thus received; but in the other it seems like a revelation of ourselves, which is true because we have the witness in our own experience. The content in one case, itself irrational, seems to come to our reason from a world without, while in the other it appears as that natural outcome of our inmost constitution, which satisfies us because it is our own selves. This *internal* necessity, of the function and of its product, is the characteristic of the Dialectical Method and constitutes its claim and title to existence.

§ 20. I do not propose to criticize that title, and prefer to attempt the removal of misunderstandings. One of these we have already noticed; you make no answer to the claim of Dialectic, if you establish the fact that external experience has already given it what it professes to evolve, and that no synthesis comes out but what before has gone in. All this may be admitted, for the question at issue is not, What can appear and How comes it to appear? The question is as to the *manner* of its appearing, when it is induced to appear, and as to the special mode in which the mind recasts and regards the matter it may have otherwise acquired. To use two technical terms which I confess I regard with some aversion—the point in dispute is not whether the product is *a posteriori*, but whether, being *a posteriori*, it is not *a priori* also and as well. And misunderstanding on this head has caused some waste of time.

The second misunderstanding is of a different nature. An

idea prevails that the Dialectic Method is a sort of experiment with conceptions *in vacuo*. We are supposed to have nothing but one single isolated abstract idea, and this solitary monad then proceeds to multiply by gemmation from or by fission of its private substance, or by fetching matter from the impalpable void. But this is a mere caricature, and it comes from confusion between that which the mind has got before it and that which it has within itself. Before the mind there is a single conception, but the whole mind itself, which does not appear, engages in the process, operates on the *datum*, and produces the result. The opposition between the real, in that fragmentary character in which the mind possesses it, and the true reality felt within the mind, is the moving cause of that unrest which sets up the dialectical process.

§ 21. We may understand that process in two different ways. On one view the method advances on the strength of negation; the synthesis, which unites and adds a fresh element, comes always from denial, and from the *contradiction* of the starting-point. Every truth is taken to have two sides, and to consist in the assertion of a pair of correlatives, each of which is the logical negation of the other. Each of these by consequence, to assert itself, denies the other; but at the same time each depends on what it denies, and so reasserts it. Affirming itself, it thus on the other hand is driven to affirm its own negation, and so becomes its own opposite by a self-seeking self-denial. Or, more correctly, the whole, which is both sides of this process, rejects the claim of a one-sided *datum*, and supplements it by that other and opposite side which really is implied—so begetting by negation a balanced unity. This path once entered on, the process starts afresh with the whole just reached. But this also is seen to be the one-sided expression of a higher synthesis; and it gives birth to an opposite which co-unites with it into a second whole, a whole which in its turn is degraded into a fragment of truth. So the process goes on till the mind, therein implicit, finds a product which answers its unconscious idea; and here, having become in its own entirety a *datum* to itself, it rests in the activity which is self-conscious in its object. This great ideal of self-developement and natural evolution led in Hegel's

hands to most fruitful results, and in the main these will stand when the principle of negativity is rejected as an error.

For the Dialectic Method does not necessarily involve the identity of opposites, in the sense that one element in its own assertion supplements itself by self-denial; and it is possible to take a simpler view which keeps clear of this difficulty. We may suppose, as before, that the reality has before it and contemplates itself in an isolated *datum*. What comes next is that the *datum* is felt insufficient, and as such is denied. But in and through this denial the reality produces that supplement which was required to complete the *datum*, and which very supplement, forefelt in the mind, was the active base of the dissatisfaction and the consequent negation. The important point is that, on this second view, both sides of the correlation are positive, and one is not the mere denial of the other. The presence of either is inconsistent with the absence of the other, and it is inconsistent with the solitary presence of the other. Thus either by itself is denied, not *by*, but *from the ground of* its positive counterpart, which in that denial makes itself conscious and so comes to light. I am perfectly aware that this doctrine is a heresy; but it is a heresy which, I think, will be found to save the real substance of the orthodox doctrine.

§ 22. We are not concerned here with the truth of this heresy, and we turn to the question which is really in hand; In what sense is Dialectic an inference? It certainly is reasoning, which by an ideal operation gets a fresh result. Take a *datum* α, and by your operation you get $\alpha - \beta$ with a further result γ. The conclusion here is, that α must be β, and therefore it is γ. And because the operation is not arbitrary, because throughout it keeps to reality, you have no hypothesis. For your middle is not something you have chosen to make; it is wholly necessary, and hence you may end in the conclusion, α *is* γ. We need hardly ask if our original formula provided for this inference.

§ 23. (F) We next may take the process of *abstraction*. In recognition we used a function of synthesis which was clearly universal, and it is natural to ask how this function is acquired. If it comes from an operation of analysis and

abstraction, we are thence led to ask whether such an operation must not be an inference. For it is an ideal experiment which procures a new result. We start here with a given whole *abcd*; we operate on this by the neglect of or by the removal of *bc*, and *ad* is left; and we then predicate this *ad* of the reality. The real was *abcd*, and in consequence of our action we know now it is *ad*. The nature of the process by which we remove what seems unessential, need not at present be discussed, but it is certain that there is some process, and that the result of this process is accepted as truth for no other reason. And once again it is true that the experiment is arbitrary, for we need not perform it, and it is not supposed to make a difference to the fact itself. Still it makes a difference to our knowledge and judgment, it supplies the because of a new perception, and it has therefore the mark of reasoning and inference.

§ 24. We have first analysis, then elimination or elision of part of the content, followed in the end by a positive attribution of the remaining content to the original subject. The operation is familiar and is largely employed, but its validity is open to grave objection. We shall consider this hereafter, but may remark at present that the doubt is whether by your elimination you have not fatally altered the subject. By removing one element you may destroy the condition which made the rest predicable. Our old friend, J. S. Mill's so-called Method of Difference, fell into this blunder, and may serve us as a warning (Book II. Part II. Chap. III.). Reality was first ABC – *def*, then BC – *ef*, and we assumed that, if we elided BC – *ef*, we should leave A – *d* standing good of reality. But here (we may repeat) were two errors. Suppose first that our *data* are pure universals, still you have not experimented with that very BC which goes with A. You have worked with a second and an other BC, and you can not be sure that there is not a difference in the way in which they operate. The first BC may give something to A, and get something in exchange, so that A may be concerned in the first *ef*, and BC be partly concerned in *d*. This unconsidered possibility wrecks your proof; and your Method of Difference is self-condemned, since it is not a method of the *only* difference.

And your error is not single; for you have withal ignored the fundamental difficulty. How can you procure your pure universal ABC – *def* without using to get it a process of elision, a "method of difference," which is still more precarious? Your premises, "Reality is ABC – *def* and BC – *ef*," are the products of an abstraction which has separated these elements from a mass of detail in which they appeared. This original process, what justifies that? What tells you that the detail, which you cut away, is wholly irrelevant, and that, without it, the reality is still just as much ABC – *def* and BC – *ef* as it was before? This objection is as fatal to the foundation of the Method as the former was to its superstructure. It points to the result that a product of elision is always to be received with the gravest suspicion; and with this result we must at present be satisfied.

But, valid or invalid, abstraction is reasoning; and it does not appear to come under the head of any foregoing process.

§ 25. (G) We have not yet reached the end. In the account, which in our First Book we gave of the Disjunctive judgment, we observed that it contained a latent inference; and the time has now come to draw this to the light. We might indeed be tempted to dispose of the enquiry by reducing the process to a three-term inference. "A is *b* or *c*, A is not *c*, and therefore it is *b*"—the reasoning here, we might say, is syllogistic, and falls under the type, "A not-*c* is *b*, A is A not-*c*, and therefore A is *b*." But this attempt would be futile, since the reduction presupposes that the alternatives are stated explicitly, in the character of exclusive alternatives. But the question as to how we become possessed of this explicit statement, remains thus unanswered, and we shall find that it comes to us by way of an inference that is not syllogistic. The syllogism is not the soul and principle of disjunctive reasoning; it is an artificial way of expressing the product and result of that reasoning (Chap. IV. §§ 6, 7).

§ 26. Before it in time and before it in idea comes the actual process, and we must see what this is. We know that A may be *b*, and again may be *c*, and once more may be *d*; we know that it is nothing which excludes all three; and we may call this our starting-point. We then go on to learn that

A is not *b*, and we conclude that therefore it falls within *cd*. Once more we find that A is not *c*, and on this we conclude, *therefore* A *is d*. We have here an obvious and palpable inference, but in what does it consist? It consists in removing the possible predicates of a given subject until the residue is self-consistent, and in then passing at once from this residual possibility to an assertion of its reality. One possibility is left, and therefore that is fact.

Our inference is not got by arguing from the major "What is not *b* or *c* must be *d*," and that major does not give the proof of our conclusion. On the contrary our process is the ideal experiment which proves this major. We know that A, which is not *b* and not *c*, must be *d*, only because we have tried and have seen that *d* comes out as the result. Thus our major, if we had one, would be the principle that a sole possibility must be actual fact. But then this again is not given as a premise, and we do not argue because we know that this is true. We know it is true because we have argued, and itself is the result of ideal experiment.

§ 27. And even this principle is not quite fundamental. For it presupposes a judgment that we have before us an explicit exhaustion of the possibilities of A. One step of our reasoning consisted in the statement, that *b*, *c*, and *d* are the whole sphere of A, and that A must fall (if anywhere) within this sphere. But the earliest form of disjunctive reasoning dispenses with such a preliminary statement. Incompatible suggestions with respect to A come before the mind, and the suggestion which survives in that ideal struggle is accepted as fact. Thus we go direct to the assertion without any declaration that our previous denial has exhausted the subject. We shall return to this process when we begin to sketch the beginnings of inference in the lower stages of mind, and at present we must content ourselves with saying a few words on the principle which underlies this early operation.

There is an axiom which we cannot fail to use, however little we may be aware of its nature or existence. All suggested ideas, we assume, are real, unless they are excluded. If an ideal content is disparate with reality, then it is not fact. If again it is disparate with another content, then

both are, at present, not yet real. The suggested idea is so far possible; but if nothing is found incompatible with it, the idea is held actual. Thus all suggestions are true unless they are opposed, and the suggestion, which maintains itself in ideal experiment, and abolishes incompatible ideas, has *demonstrated* its own validity. The survivor from the struggle of competing ideas has shown itself fittest, and it *therefore* is the truth. This ominous *dictum*, which contains the soul of disjunctive reasoning, awakens our scruples, and when we discuss the validity of the process it gives rise to, we shall have to weigh these scruples in the balance. In this place it is enough to have shown that once more we have found an operation, which is not three-term reasoning, and which yet lays claim to the title of inference.

§ 28. It is worth our while to pause for a moment, and to see the extent over which this principle operates. Any judgment whatever may be turned into reasoning by a simple change. For we have merely to suggest the idea of the opposite—we have only to suppose that the truth is otherwise, and at once the predicate, which we already possess, excludes that suggestion and returns to itself as what *must be* true. It now is real *because* it must be so; and it is a *necessary* truth, for it has entered the field of ideal experiment and has returned victorious. The process seems frivolous, since it turns in a circle; we return to the place from which we set out, and the predicate of necessity but adds the idle form of "It is because it is" (cf. Book I. Chap. V. § 29). We first degrade our judgment to a mere idea, and then assert the idea on the strength of the judgment. But this process, circular when we apply it to judgments, is very different when used on mere ideas. Take any idea, no matter what it is, suggest it of the real and find it compatible; bring it into collision with the other ideas which are disparate with itself, see that it defeats them in open competition, and then go on at once to assert its truth—this alarming process appears to have no limit. Yet valid or invalid, it certainly is inference. Whether we explicitly state the possibilities as exhausted, or simply ignore their possible enlargement, we have in both cases reasoning of a type that does not fall under any other head.

§ 29. We may add the remark that apagogic inferences belong to this class, for, whatever intermediate steps they may employ, they in the end must turn on a disjunction. They make a transition from the denial of one predicate to the assertion of another. And that transition assumes that no other possible predicate exists. The large amount of vicious reasoning which attends the use of the indirect method, is mainly due to forgetfulness of this fact. The bad logic which abounds in philosophical discussions consists in great part of conclusions based upon hasty disjunctions. And perhaps no writer can hope entirely to escape from this error, for the process, in which we are most likely to slip, is at times unavoidable.

§ 30. (H) We have nothing now left but our old friends the so-called Immediate Inferences. And these have given cause for scruple; doubt extends not only to the nature and principle of their procedure, but even attaches itself to their actual existence. If they are mere tautologies, rearrangements of words without alteration of ideas, they can not be inferences. And some of them appear to be little else. To argue from "A is B" to "Some B is A" gives rise to suspicion, and that suspicion is deepened if we infer that B is equal to A because A is equal to B, or that A must be to the left of B, since B is certainly to the right of A. We may ask in these cases what new conclusion comes from the process. On the other hand if, given that A is B, we are offered the assertion "Not-A is not B," we decline to receive this erroneous addition. We should call it a bad inference, and should hence be compromised when invited to deny that the legitimate "Not-B is not A" is an inference at all.

We need not enter on the thankless task of enquiring in each case if the inference is real or is simply circular. For no logical principle is involved in this controversy, and it will be enough to show that, given the validity of the immediate inferences, we have already laid down those types of argument under which they will fall. In any case they will make no addition to those classes of reasoning which we have already reviewed.

§ 31. Where the so-called inference repeats the assertion

from which it started, there is nothing to be said. From A = B to proceed by proof to B = A is an impossible process. In each case you possess the same relation of A to B, and the order in which you take those terms is perfectly irrelevant. Hence the alteration which is made is psychological, not logical, and is concerned with nothing but the verbal expression.

Let us take another case where the process seems doubtful. It is not easy to answer off-hand the question, if "No B is A" is a mere repetition of "No A is B," or if "Some B is A" is a real advance on "A is B." But suppose that these are inferences, they both fall under heads which we know already. If, given one truth, you perceive another implied or contained in it, this process is analysis followed by abstraction. And what falls outside this is an inference from disjunction. If to perceive for instance that Not-B is not-A, an experiment is required which goes beyond the inspection of "A is B," the process in that case will be indirect and the reasoning apagogic. I will illustrate these general observations by some remarks on the detail of Immediate Inferences.

§ 32. If we consider first the immediate conclusions from affirmative judgments, we shall find a good deal which excites our wonder. The ambiguity which besets the word "some" brings disgrace on this part of the traditional logic; and behind this ambiguity there is something hidden which will hardly bear the light. Let us take the judgment as assertorical, "All A is B." What is it, we may ask, that the inference gives us, save this same relation over again? Take the judgment first in extension as "All the A's are all the B's;" is it any news to be told that also "All the B's are all the A's"? Is it not the old relation once more? Or if you know that the A's are a part of the B's, are you further advised when you learn that a part of the B's are the A's? If again from "All the B's are all the A's" I am ordered to conclude, that they are *at least a part of the* B's, I must ask for information. To what am I committed by this doubtful formula? If it means that a collection, being taken distributively, *is* taken distributively, that, if I have seen *a*, and have also seen *b*, and also seen *c*, I must therefore have seen each—then where is the inference?

But if it means that what is true of a lot is true of some or each component part of that lot—then the inference is vicious, and the lot again is perhaps hardly taken in its extension. And if I am invited finally to argue that, since I am certain of each, I therefore am certain *at least* of some, since that may be true even though I can not be sure of each, then I must answer that you seem to be suggesting that I should doubt my premise upon the ground of its certainty.

If again you do *not* take the predicate in extension—if you argue Because all the A's have a quality B, therefore some things which have the quality are all the A's—I can not see how you have advanced one step. You know already that there are things which have a quality B with a quality A, and what more do you learn? Your "*at least* some B's are A's" is not a positive conclusion at all. If it is neither tautologous nor downright false, it is a caution to yourself *not* to make an inference of a certain kind. It says, "I have a certain relation which I must not go beyond; to dispense with the 'some' would be wanton temerity, and to say 'at most' would be unauthorized despair. The right state of mind is a doubtful hope, or an expectant ignorance." But this is not to infer, or, if this is inferring, it is an inference which in the same breath concludes that we must not make an inference.

And if, while we keep its assertorical character, we try to read the whole judgment according to intension, we fare no better. It is a fact that the attribute B attends upon the subject or attribute A. Can we proceed from this to anything more than a vain repetition? To bring in our "at least" is a futile expedient, for it merely reminds us of what we did *not* say, and of what we must *not* say, viz. that B is never to be found without A. But this is not making a good inference; it is forestalling a bad one.

And if you reply, "To forestall a bad inference is to infer. For how else should I know that my inference was bad, unless after making it I compared it with my *datum* in an ideal experiment? My "*at least* some B is A" does mean that besides there is a *mere* possibility. And the knowledge of this possibility, which to me is not more and must not be thought more, how else should I get it but by an inference?"—then

I answer that I am ready to accept your contention, for you now have yourself admitted that your conclusion is not *assertorical*, but is *problematic*.

§ 33. The truth is that, if you keep to categorical affirmatives, your conversion or opposition is not rational, but is simply grammatical. The one conversion which is real inference is a modal conversion, and that presupposes a hypothetical character in the original judgment. I will not labour to prove this last observation, but will proceed to show that a hypothetical judgment can be converted modally.

It can not be converted in any other way. In "given A then B" you experiment with A, and your result is B. But you can not, by simply taking B, experiment with that, and so get as a result its relation to A. This I think is obvious, and if in despair we fall back on our old device and bring in "some at least," we shall get no further. We shall succeed in saying "Given B you have A, if you suppose the case where A has given B." This is barren tautology.

The real conclusion is "B *may be* A," but this once again may be reduced to mere words. If you start with "Arsenic creates such symptoms," and conclude "The symptoms possibly have come from arsenic;" or if you begin with "Any dog is a mammal," and go on to infer "A mammal may be a dog"—it is possible that still you are drifting between the Scylla of false inference and the Charybdis of verbiage. It is assumed that you mean to go beyond the truth you started with, and that you are not content with the impotent result, that the symptoms are arsenical upon the condition that arsenic has caused them. You really mean that *they may or may not be arsenical, but that you have some reason to judge that they are so.* And this is the point; for you do not judge directly of the real facts; you do not conclude by a vicious extension that, given some other drug, you might have the same symptoms; nor again, by an orthodox but imbecile process, that, since arsenic must be mortal, its administration at least may be the cause of death. This is not your meaning, and you would be sorry to be understood as conveying such frivolity. Your real judgment is about your own grounds of belief and disbelief, and is only indirectly an

assertion about facts. That the death may have come from arsenic can mean, that, among the possibilities of death which are otherwise unknown, we can specify this one. And you perhaps meant to say this; but it is more likely that you meant to say something else. For you knew nothing before about arsenic as a possible cause of the death, except that you had no more reason to believe in it than in anything else. But now, from the knowledge that it does produce death with certain symptoms, you can make an inference. You have that reason in favour of its chance when you seek the most probable cause of the death. Among all the possibilities this alone has extra weight, and the weight turns the scale. The symptoms may or may not be arsenical; but in favour of the former we have at least the consideration that arsenic certainly would produce them. There is so much more probability in favour of arsenic than there is in favour of any other cause. And this, I think, was what you really intended to convey.

And if the conversion has this modal character, it then will imply an inference based upon the disjunction of possible alternatives.

§ 34. This argument from certainty to probability is, I think, the real sense which underlies the conversion of affirmative judgments. We may be told, in answer to our charge of frivolity, that such conversion and opposition are a valuable agent in education, and that therefore the orthodox logic in this point can not be wholly absurd. Most absurd, I reply, in the doctrine that it inculcates, but possibly useful because misunderstood into something rational. It can not, I should say, much profit a pupil to be taught that, if "every dog is a mammal," he may argue that "some mammals are therefore dogs," and from this make his way to the triumphant conclusion "*Some* dogs are mammals" (cf. Lotze, *Logik*, § 81). I should have thought that it might have been better to tell him that, unless he has special information before him, he can not reason straight from the attribute to the subject or from the consequence to the ground He might be told, I should have fancied, that the presence of the former was a sign to his mind, which so far certainly increased the probability of the latter, but still could not prove its actual presence. This is

what he must learn, if he really learns anything else than folly, and this he has to learn in spite of his teaching. It is here as elsewhere with the uneducated professional. He is pledged to the creed that truth can not be imparted until lost in a medium of superstition and nonsense.

§ 35. If we pass to the conversion of negative judgments and to conversion by way of contraposition, we must modify these charges. It can hardly be maintained that in this new sphere we have no frivolity; but on the other hand it can not be said that we have nothing else. From "A is not B" there seems really a passage to "B is not A." This no doubt may be questioned; we may be told that we knew before that A and B were incompatible, and that now we but know that B is incompatible with A; we thus have the same relation with a grammatical difference. But this view I take to be incorrect. It is true no doubt that in negation we may be said to experiment with *both* our terms, while in affirmative judgment we have but the first. Still the result, arrived at by the negative experiment, is *not* the incompatibility of A and B. We find that, given A, B can not be there; but as to what will happen when B is supposed, we have no information. Hence the relation arrived at is so far onesided.

How then do we gain the other side of this truth? Most certainly not by any general principle, for that principle itself must first be got by the process in question. The process must consist in another experiment, which takes B as real and, suggesting A, again finds exclusion. The essence of the inference is open to doubt. It might be treated as the explicit perception of a new relation, got by abstraction from an implicit whole; but I should prefer to take it as apagogic. Suppose B, then A is excluded or is possible. First let it be possible, and then A may be B; or again B may be not-B, for B can be A and A is not B. Thus we prove indirectly that B excludes A and that the two are incompatible. It is by virtue of the same apagogic process, that we are able to reason from the absence of the consequent to the absence of the ground.

§ 36. This brings us to contraposition, and here without doubt we have real inference. Given "A is B," we can be

sure that not-B is not-A; yet we can not be supposed to see this immediately. The process is indirect, and rests upon disjunction. Not-B must either be A or not-A, but A is impossible, because, given A, we must have B; and by consequence B might exclude itself, or, if absent, must be there. This conclusion removes the alternative "Not-B is A;" and, since but one possibility remains, that is therefore actual, and hence not-B is not-A. We might desire something better than such an indirect reasoning, which depends on the mere exhaustion of alternatives; but the desire would not easily find its satisfaction.

§ 37. I may end by mentioning the so-called Inference through added Determinants. If we are sure that a negro is a fellow creature, we may go on to argue, A negro who is in suffering is a suffering fellow creature. Modern prejudice takes the truth as a tautology, and would deny the very existence of the inference; but against this we may set the moral prejudice, which, admitting the existence of the reasoning process, practically refuses the conclusion. The process is certainly vicious in form, for the addition may, so to speak chemically unite with the terms it is applied to, and may form two components which are incompatible. A lie is a bad action, but it is only in rhetoric that a virtuous lie is a virtuous crime. So "friends are welcome," but "friends in adversity" may find their added determinant makes a change. The form of this inference, it is clear, will not stand, and it is better to reduce it to two main types. In one of these we say "A under any condition is B, C is A conditioned, and therefore C is B." In the other we betake ourselves to the Third Figure, and abstain in the conclusion from elision of the middle. "A is B, A is C, therefore CAB is true," or "This negro is a fellow creature, and this negro suffers, hence we have in this negro a suffering fellow creature."

The same liberty of leaving the whole construction gives the rational solution of another puzzle. "Because a horse is an animal, the head of a horse is the head of an animal" (Jevons, p. 18). If this argument can not be reduced to syllogism, it is because the syllogism has first crippled itself. The attributes of having a head and being an animal are united in a horse,

and you conclude, in the third figure, that Under some conditions an animal has a head; or, without elimination, that, In the case of a horse an animal has a head. But this differs from the result given by Professor Jevons in nothing except grammatical form. The whole difficulty has arisen from the supposed necessity of eliding the middle.

I do not know what to say of that inference by way of *omitting* a determinant which Mr. Venn notices (*Symbolic Logic*, pp. 285–6), for I do not think that I understand it. "'Men are rational mortals; therefore they are mortals:'—Here we have omitted the term 'rational' from our result, that is, we have eliminated it. Or we might have omitted the word 'mortal,' by saying that 'men are rational.'" But, if we did this, we should surely be proceeding in a way which we can not justify. If our conclusion is based on extraneous information as to the irrelevance of one term, that information should have appeared as a premise. But if we mean to rest on the bare statement that we have, then we are certainly illogical. We may mean that men "before identified with 'rational mortals' are now identified with an uncertain part of the larger class 'rational,' or 'mortal'" (*ibid.* 287)—but, if so, I must repeat a former criticism (§ 32): We shall have argued from my certain knowledge to my uncertainty and ignorance. We shall in effect say, *because* I am sure of a thing, therefore, and for no other reason, I do *not* know it. And this surely will not do.

We may object on other grounds. The judgment may become false if you remove any part of it. "Religious miracles are pretended facts that are necessary illusions;" try elimination here. Or test the process by Mr. Venn's own instance. Men would *not* be rational if they were not mortal, nor would *they* be mortal if they were not rational; for in either case they would cease to be men. Our argument has illustrated a well-known type of logical mistake. For men *simply* rational would, metamorphosed by no logical change, have risen like the angels; and *simply* mortal would have lost that foreknowledge which divides them from the beasts. Each alternative robs them of their human existence; they perish alike before the nudity of Reason, and *la mort sans phrase*.

§ 38. The list of the so-called Immediate Inferences has not given an additional type of reasoning. They all fall under the previous classes, and none of them can strictly be called "immediate," for none gives a conclusion without an operation. But, if we leave them and ask for the general result of the present Chapter, we may state it thus. Apart from these last, we have found a number of palpable inferences which can not be brought under the formula we laid down in the previous Book. The list of such processes may not have been exhaustive, but enough has been adduced to show beyond question that the general nature of the reasoning process has yet to be ascertained.

CHAPTER III.

GENERAL CHARACTERISTICS OF INFERENCE.

§ 1. The position we now stand in is briefly this. It is not every inference that gets a new relation of the original elements, by means of a construction that interrelates them. This is not the universal type of reasoning, and it obviously does not present us with its essence. The ideal operation is not always a synthesis based on the identity of given terminal points. The place of such a construction may be taken by processes, the nature of which we have partly seen, but whose general type we have not yet asked for. But we must delay that enquiry till we reach another chapter. At present we shall not take this diverse array of ideal operations, and try to reduce them to common types; for, before attempting this scrutiny, we may pause with advantage and raise some questions.

§ 2. And the first of these is, Can we not at once say something general about the nature of reasoning? Without regard to the differences which we have brought to light, is there not some account which holds true of all of them? And we answer that we can see clearly such a common character. No matter what the operation may be, there is always some operation. This operation is an ideal experiment upon something which is given, and the result of this process is invariably ascribed to the original *datum*. We have here an application of the Principle of Identity, for what is true of a *datum* within the operation of our ideal experiment, is also in some sense true of that *datum* without regard to the experiment. This formula holds good throughout all our instances, and it will repay us to consider them awhile from this side and aspect of their nature.

§ 3. In reasoning we have a starting-place that is given, a subsequent operation, and a consequent modification of that

starting-place. In an abstract form we may represent it as follows. First A, then A in ideal experiment becoming A*b*, and last the assertion that A*b* is true, unconditionally or conditionally. We have thus (i) Premises or premise, (ii) Operation, and (iii) Result. The first is A^1, the second is A^2b, the last is A^1b. For what holds of A once will hold of it always, and the quality, which A gets in the context of that process which we represent by A^2, belongs in some sense to A apart from the process. Our present task will be to verify this type throughout all our examples.

§ 4. We may preface the enquiry by a reference to causation. Without discussing the exact relation which exists between the causal and the reasoning processes, we may refer to something which they have in common. In causation you first of all start with the elements called the "conditions," the next step consists in the process of change which issues in a certain result, and the whole is complete when that which has resulted is ascribed to the original conditions. It is the same with inference. The result of change that issues from the process into which the original *datum* enters, is ascribed to that *datum*. Both causation and reasoning depend upon identity, sameness in spite of a growth of difference; sameness again which preserves itself, not by refusing but by appropriating that difference. Both are alterations of a *datum* which is changed, but survives in its changes and makes them its attributes. In a future chapter we shall further discuss the relation which subsists between the effect of a cause and the conclusion of an argument.

§ 5. Returning to the task we have now in hand, let us proceed to the application of our general remark. And let us try first those inferences which interrelate three terms, and which so bring out a new relation. In these we have first the elements of our construction existing apart, then we have the construction, and last of all the new relation. Take for instance "A to the right of B, and B of C, and therefore A to the right of C." We here have got (i) two spatial relations, or rather two sets of terms in relations of space, and we may call this starting-place reality qualified as these pairs of relations. Let us pass to the second step (ii); this gives us

the synthesis of those very same terms which we had at the beginning. The construction certainly is a difference, but it does not make such a difference to our terms that they lose their identity. We next (iii) perceive a new relation, the result of the construction. But since the terms are the same notwithstanding the construction, they are the same in respect of this further result, C – A. Hence the real, qualified as C – B B – A, is the real qualified as C – B – A, and that again is the selfsame subject as the real which has the relation C – A. We have sameness both within and without the construction, and we have appropriation of that construction's result.

Take another argument, "A is equal to B, and B to C, and therefore C = A." The whole synthesis of these terms, effected through B, is the second stage, on which follows thirdly the separate perception A – C. The result of the construction is taken as its attribute, and is so predicated; and the construction itself is in just the same way made an attribute of the terms. A, B, and C are the same in the construction and with the result that it developes, as they were apart from it. The issue of the operation is simply their own being.

And we can verify this type in the common syllogism. In "Mammals are warm-blooded, men are mammals, and so men are warm-blooded," we find the same elements. First the separate judgments are given us as true; we have reality appearing in the attribute of these two syntheses, "man-mammal" and "mammal-warm-blooded." Then the construction follows, and from that the intuition of "man-warm-blooded." But the relation which we predicate of these extremes, is not a foreign compulsion of their nature. For the issue of the process, the result of the change, has not removed their sameness. They have remained through alteration, and accept the difference as their proper attribute and native possession.

§ 6. Where we go from the construction not to a new internal relation but to a quality of the whole, our account still holds good. The elements, which during our circular voyage we received discontinuously each in isolation, first

combined themselves into a spatial whole, and then took on the qualities we understand by "island." But the reality throughout has maintained its identity. It moved before our eyes a changing show, that came fresh from the unknown and slid back perpetually into nothingness. To our judgment it appeared as a discrete series of spatial arrangements; and it was with this series that our reasoning began. That, boldly relying on the Identity of Indiscernibles, built up for us an intellectual whole, and that whole presented us with certain qualities. We then attributed these qualities to that very reality which was manifest in our fragments of successive coast line. The reality has certainly both undergone experiments and suffered changes at our hands. It is not what it was, and it yet remains the same; for it is itself and more. It is the original subject with additional attributes, conferred upon it by our ideal operations.

We find the same when we pass to spatial arrangement. Bricks and mortar with the builder are here our premises, the compound action and reaction of the two may be called the construction, and the conclusion is the appearance of the house. It may be doubted how the elements, which we had at the start, can survive in the result; yet we can not but think that somehow they have survived. For otherwise it would surely be false to say that the house is the effect which has come from these causes. I admit the difficulty which attaches to identity, but it is still harder to believe in a discontinuous existence and in a divided reality. For if in the house you have not got the work done by the builder on a certain material, you have no right to speak as if you had. And you could not even say that the house has appeared, without synthetic judgments which assume an identity. If the reality has changed, the same reality must be there still, and if the reality has *not* changed, there has been no change whatever; for a sequence of mere differences would have nothing it could alter, and could not generate even the show of alteration.

And in the same way when, not externally but simply in my head, I rearrange elements by an arbitrary choice, the result, which I get at the end of my process, is true of the basis from which I began. That foundation has survived and

has got a new quality without the loss of its own selfsameness. The result is hypothetical, since my free action was no more than possible. One element of the cause, apart from the others, is but the hypothetical producer of the consequence, and is no more than what we call a "condition."

§ 7. We may deal rapidly with the operations of addition and subtraction. We have the units arranged in a certain manner, and these are our material with which we begin. Then follows a rearrangement of these units, and a consequent perception of another attribute which also belongs to them. Throughout the operation the units are identical, and they appropriate the result of the experiment. And since it is assumed that to them the experiment can *make* no difference, therefore that difference becomes a *categorical* predicate. The units with a quality of certain integers go into a process, and come out in possession of another quality. Thus by virtue of this change the identical subject is credited with both contexts, or, in other words, the two different arrangements, which we began and ended with, are taken as identical.

And it is clear that the same view holds good of geometry. The *data* are divided or are rearranged or are compounded with arbitrary fresh surroundings, and from this manipulation comes out a result. But since the experiment adds nothing to the *data* nor takes anything away, since again the *data* remain the same throughout the experiment, the result becomes their categorical attribute.

§ 8. In Comparison it is easy to recognize the same type. A and B are first given us apart from their relation. The next stage is the process, in which we bring them together, and so perceive a relation of likeness. The relation is then predicated of A and B apart from our comparing activity. They *are* alike because their change to this relation was no alien imposition, and because their identity has remained unimpaired throughout the alteration. The same remarks apply to the inference of Distinction.

And they apply once more, with slight modification, to Dialectic reasoning, to Recognition, and to the Hypothetic judgment. In all these we have but one premise explicit; we start with AB, and, subjecting this to an ideal experiment,

we are given ABC. The original *datum* is met by a function which produces a result. But it is assumed once more that the synthesis does not arbitrarily add from the outside ; and hence, since the *datum* is the same in the experiment as it was beforehand, the result is taken as its quality and attribute.

Nor in passing to Abstraction do we find any change. We start here with reality in the character of $abcd^1$. This same content is subjected to an ideal operation as $abcd^2$, and then presents us with $a-d$. Upon this we conclude that $abcd^1$ is also ad, or, more directly, that the reality is ad. But our conclusion would be false, did it not presuppose the identity of the subject in two different contexts.

§ 9. In Disjunction lastly we find once again this identity. Whether we begin with the alternatives stated as exclusive, or with a simple field of possibilities, makes no real difference. We start with a subject determined inside a certain area of possible predicates. This subject then undergoes an operation which reduces that area, and it ends by seizing on the undestroyed remainder as its actual attribute. But it could not do this, if it stood outside the process or were dissipated within it. Itself goes there and is active, preserving its self, and emerging with a difference which it refuses to give up.

The same character is seen in Apagogic reasoning, and again in that qualification through rejected suggestion, which (by employing the supposal of an opposite) turns "it is" into "it must be." The identity within and without the experiment needs here no indication. And finally the Immediate Inferences, which we were last concerned with, are not independent. They arrange themselves under the heads we have discussed, and our foregoing remarks have already dealt with them.

§ 10. Our result so far is that inference is the getting a new result from a certain *datum*. The result is procured by an ideal operation upon this *datum*, and when procured becomes its predicate. Reasoning thus depends on the identity of a content inside a mental experiment with that content outside. And so we find once again in the total process that need for individuation, which we before discerned in the middle construction. Just as that construction was

insufficient to give us a new relation of the extremes, unless it joined them in an individual whole—so here the full process would not get to a conclusion, unless it possessed an individuality. And it is made individual by the identity of that content which runs right through it, and which joins the final result to the initial starting-point. So much at least we are now able to say in reply to the question, What is an inference? And this beginning of an answer we may go on to make clearer by laying down some important distinctions.

§ 11. It is not any and every mental activity which can properly be called reasoning. This claim could not, I think, be seriously maintained, but it may perhaps be worth while to examine its nature. We may be asked if our account, so far as it has gone, has not tacitly admitted such a sweeping pretension. "Does not every ideal activity," an objector may urge, "first begin with a *datum* and, performing on that an ideal operation, so produce a result? Take for instance judgment. Here we have the reality, and we qualify that subject by referring to it a suggested content. That is an ideal action, and it is an action again which brings about a change which it does not create or manufacture. The result is ascribed to the original *datum*, and ascribed by virtue of an ideal operation." We must briefly reply to this mistaken claim.

§ 12. There are two questions we must endeavour not to confuse. Each of them asks if judgment is inference, but each makes that enquiry in a different sense. The first asks if all judgments *imply* an inference. That is, does judgment presuppose and is it the conclusion of a reasoning such as is described above? That is the first question, and the second is quite different. For the second enquires if every judgment by itself *is* an inference, independent of and apart from any of those processes which we have hitherto called argument. We will begin by dealing with this latter claim.

Suppose for instance that we had an operation, which, taking X, simply added on y as a mere suggestion that came from the outside, and then judged $X-y$. Could we call that an inference? No doubt it may be said to preserve an identity: no doubt again that it ends with a judgment, which

may fairly be said to predicate something new of the original *datum*. No doubt once more it is an ideal activity. But, notwithstanding all this, it is not an inference. The *y*, which in conclusion it attributes to X, is not in any sense *got from* X by an operation thereon. It is stuck on from the outside; and because the result, ascribed in the conclusion, is not procured *from* the starting-point, therefore this result is not a real conclusion.

§ 13. In the arbitrary synthesis of a suggestion with reality the predicate does not really come from the *datum*. It thus lacks an essential character of inference, the getting of the product on and from the premises. We may try however to renew the attempt in an amended form. Judgment, we may say, is an inference of this kind; we have (i) Reality together with a suggestion, and beside these two we have an arbitrary power of junction. These three elements are our premises, and we have (ii) the actual union of these elements, which gives (iii) the synthesis of the predicate with reality—and this result is a conclusion. But this amended attempt is as futile as the former. For the judgment in the first place will not be categorical. In this it will be like free spatial arrangement; so that the inference, if there is one, does not end in the simple assertion $X-y$. It can not go beyond, "If X is treated in an arbitrary manner it will turn to $X-y$." And perhaps this is senseless. For in the spatial arrangement the combination of the *data* produced a new quality, while here on the other hand it produces—their combination. We must end by writing the result of our process, "X, if X be $X-y$, must certainly be $X-y$." And there does not seem to be any inference here.

§ 14. I offer no apology for pursuing these somewhat dull enquiries, since it seems to me that every answer we elicit throws some light on our general doctrine. We have seen so far that judgment *is* not inference, and that a process which was nothing more than a judgment would never be reasoning. We may now approach the second question we asked: Is every judgment *part of* an inference? Does, that is to say, judgment presuppose a process which must be called reasoning? May assertion be always taken as con-

clusion? This is really a somewhat difficult problem, and, as we shall have to recur to it afterwards (Chap. VI. § 15), we may content ourselves here with some brief remarks.

§ 15. Some judgments, we know, do involve a reasoning. We saw that this held of hypotheticals, since the supposition that A is *real*, is itself an ideal operation on this content. For, in the union with reality, A is met by a function of synthesis and so developes a new connection. And again if we take those common judgments which go beyond presentation—I mean those extensions of sense which supply us with the past or with the unseen present—they are all inferential. They imply, as we saw, an ideal operation, and it was for that reason that we called them "synthetic." Nay, when, leaving these, we come down in the end to those judgments which assert about present perception—the class we thought fit to call "analytical"—even here it may seem we are dependent on reasoning. For these assertions are based on a process of mutilation. They are all abstractions, and abstraction, we now know, is a kind of inference. So that, resting on these grounds, we clearly have got some cause to maintain that judgment is never separable from reasoning.

§ 16. But there is ground on the other side from which we might deny this thesis. "Admitted," we might say, "that every judgment can be turned into a kind of inference by a suggestion of the opposite, yet all judgments do not undergo this operation. In the first place the operation may be wholly circular (cf. Chap. II. § 28), and hence illusory: and then, apart from this objection, in very many cases it does not exist at all. These cases so far will be free from all reasoning. And now, passing from this point, let us take in hand a more real difficulty. We admit that all judgments, though they may not combine, at least must mutilate; but it does not follow that they therefore infer. 'Mutilation' is ambiguous, for you may perform the operation or may simply accept it. A judgment, that is, may *either* start with something given, and by working on this may extract an isolated and abstract product, and this would clearly be inference; *or* on the other hand, instead of selecting, the judgment may receive. If the original whole has never been

given to the judgment, if the judgment takes up a foreign suggestion which itself is mutilated, then, although in conclusion we affirm an abstraction, yet *we* have not abstracted, and the result *for us* will not be a conclusion."

§ 17. "For," we might continue, "you should consider it so. You can not reason categorically unless you start with a given, and unless this given premise contains a judgment.* If therefore all judgment depended on inference, you never would get to an ordinary judgment. And the only way in which to escape this circle, is to begin with judgments that imply no reasoning. Nor is this impossible, for you may have a result which involves selection, and yet you may never yourself have selected. An abstracted content can be conveyed to your mind, though you have not worked on the raw material. The testimony received from others is an instance; and then, apart from the reasoning of other men's intellects, you have your own senses. Judgment rests in the end on suggestions of sense, and these suggestions are never uniform. For we do not feel one equable and steady flow, we are not in contact with a level surface; the judgment does not come down unsolicited, and compose at random its spontaneous junctions. This, if it were possible, would be to reason without reason. But it is not possible. Before judgment appears there are prominent points in the suggestions of the senses. A stands above the level and with it stands B. Together they knock at the door of judgment, which admits them together and keeps back the rest. The result may thus present an ideal synthesis, an intelligible abstraction; but the process is no selection of the reason. It is bare natural selection, where the fittest have survived and where the strongest are most fit. And hence the conclusion, for the intellect, is the work of chance. The mind has not embraced the persuasion of argument, but has yielded to the insistance and the emphasis of sense."

§ 18. Such is the answer we might make to the claim of all judgment to stand as inference; and in another Chapter we shall have to weigh the worth of this denial. But we can not pause to consider it here, and must be content with a

* This statement must be taken subject to the explanation given in Chap. VI. § 15.

partial answer to our questions. All judgment is not inference, if *mere* judgment claims a position as inference. So much is certain. But when asked if judgment does not presuppose inference, if in short the two activities are not diverse stages of a single function, we can not yet give an answer. We have however shown some reason for considering them as separate, at least for the present.

Judgment then is not inference, and reasoning is not the same as intellectual activity. We must now go on to consider a narrower claim. Has all Redintegration a right to assume the title of inference?

§ 19. Every reproduction is clearly a function which starts from a basis and gets a new result. And some reproduction of course is inference. Where, AB being given, C is supplied and then attributed as a predicate to AB, we have a kind of reasoning with which we are now familiar. An ideal whole is produced by a process, and a judgment follows from this ideal construction. And if redintegration always had this character, the question if it always might call itself inference, could be answered at once and answered affirmatively.

But there are other reproductions which are far from appearing to possess this character. Redintegration does not always seem to result in judgment. An object may excite vague feelings of pleasure or a dim sense of pain, but these feelings need not be attributed to that object. Their content is not always taken apart from their existence, and applied to the thing as one of its adjectives. They may remain my feelings, mere psychical phenomena, which are together with the object but form no part of it. Hence the process has no right to call itself inference. For it does not end in a judgment; the starting-point does not survive in the process, maintaining its identity and appropriating the difference. We simply pass from it to another existence which is taken as existing on a level with the first. This process is on the one hand *ideal*, in the sense that it advances on the strength of a connection between universals. But on the other hand it is not *logical*, since the universal, brought in by the ideal connection, is not used as a content which is bestowed upon the original object

and particularized by that reference. The universal on the contrary is allowed to become an independent fact, in which the content is one with the existence, and where the particular character is supplied psychologically from my whole state of mind. There is hence no logical individuation. What unity there is does not fall within a developement of the *datum* through one process of change. It falls simply within my feeling self; and the result is a conjunction which is no connection.

It is useless to object that the result in the end may be a judgment which affirms the existence of this mere conjunction in my soul. For that result will be no inference from the original *datum*. You may say that we certainly have got our conjunction from the *datum*, but after all that *datum* does not survive in it. And so we have not got a content, we have not got a predicate, our result is not ideal, nor is it a conclusion. And when starting again from this mere psychical fact you go on to a judgment, then, let that be an inference, it has not been *inferred from* the content we began with. It has come from a fact whose existence has supervened.

§ 20. This discussion, I fear, may prove hard to follow; and the reader who finds more than moderate difficulties, had better pass on to the following chapter. For we are now about to raise another question, both important and relevant, but not essential to the understanding of the sequel.

There is an answer we might give to the foregoing section. Admitted, we might say, that some redintegration exists, the final result of which is not logical, yet the process itself, with its immediate product, is still an intellectual inference. All reproduction will in that case be reasoning.

We objected in our Chapter on Association, to the formula we found laid down by Wolff, on the ground that reproduction went beyond *perceptions*. And on this very ground we have just objected to taking the process everywhere in the character of inference. The unity of the process we found might be other than the individuality of cognition. But a doubt may now be raised as to whether this result is after all not mistaken, and it may be urged that, at bottom, the recall and reconstruction are purely intellectual.

Let us try to state this possible contention. It is admitted on both sides that an object, once accompanied by certain feelings, may, when it is either reinstated ideally or once again presented to sense, bring in those feelings. The issue is this—Are the feelings, as such, reproduced or produced? We have assumed so far that the former is true, but our assumption admits of being traversed thus. Feelings, it might be urged, can not be recalled unless made universals; and this unconscious abstraction suggests the presence of intellectual work. For suppose that when the object was presented, it, together with the feeling, engaged our attention. This mere attention will be apprehension, it will imply selection and rudimentary judgment, and this alone and by itself will set up between the elements a logical connection. It will make the whole perceptive, so that now, given one part, the rest will follow. Hence the feelings are recalled as they are for perception, and that process is inference. They certainly come to us as psychical facts, but this final result *falls outside the inference*, and is a mere psychological addition.

§ 21. Let us further explain. We must remember that every psychical phenomenon is complex; for on the one hand no perception is without some tone of feeling, and every feeling on the other hand is partly perceptive, and has a content, a character, a quality that we recognize. Now suppose that this perceptive side of the feelings was attended to together with the object, in that case the object will recall it by reasoning, and will supplement itself by this inferred content. This is inference, but it still falls short of what is wanted, for it does not account for the side of mere feeling. How, it may be objected, do you get back to that? If you do it by redintegration, then, after all and in the end, you have been forced to admit the reality of what you denied, a reproduction that was not logical.

And this is the issue. The view, which we are here attempting to work out, would admit that such reproduction would not be logical, but then it would deny that such reproduction exists. It would urge in opposition that it is the perceptive side of the feeling which is reinstated, and that this produces actual feeling *directly* and not through reproduction.

The perceptive side may be particularized first by the psychical context into which it is brought, but this is not the point. The point is that it works directly on the soul, and by that working causes an actual feeling which is like the original. Thus the old feeling, *as* feeling, is in no sense reinstated ; but the real fact is that the soul is such, or has become such, that, without restoration or redintegration, and by nothing at all but simple reaction, it responds to the idea with an outcome of feeling. And, if this account is true, a restriction has saved us. The feeling is not the conclusion of an inference, but falls wholly without it as a mere psychical effect. And, if so, the actual reproduction is purified from feeling, and remains in the character of intellectual connection.

§ 22. I think that this view deserves careful attention, but I must not be understood as adopting it wholly. It is not that I doubt the reality of the psychical process which it describes ; for I am sure that in some cases that process exists, and its existence has somewhat important bearings. The confusion for instance which in English Moral Philosophy besets the word "motive," arises mainly from a false assumption on this very point. And that confusion disappears when we distinguish between the idea itself and its psychical effect (cf. *Ethical Studies*, Essay VII.).

But it is one thing to hold that a process exists, and it is another thing to deny the existence of any other possible process ; and here I hesitate. We might explain perhaps every phenomenon offered, on the view that reproduction is always logical. This view in the hands of those who espouse the cause of the intellect and are champions of its primacy, would be a weapon perhaps not easy to withstand, and which would make short work of many difficulties. But then in some cases the explanation might force the facts. And again any inference from the universal character of what is reproduced to the logical nature of the reproductive process, would appear to me to be questionable. The logical is universal, but I am far from sure that the universal must be logical.

And I doubt on another point. This simplification might be premature ; for suppose we got down to an ultimate true doctrine of the relation between the elements of our nature,

and suppose we saw clearly how the intellect stands to the emotions and the will (if there really is a will)—are we sure that this weapon would any longer be wanted, and that the difficulties would keep the form that they now wear? To this doubt I can only allude in passing.

But however we settle the questions just raised, we are certain of one thing in respect to inference. The mere result of feeling, not attributed to an object, is never a conclusion. Whether produced by reinstatement, or not so produced, in neither case will it come straight from reasoning. For in the latter case it will fall outside the process, while in the former case the process is no inference. And with this we may proceed to another enquiry.

§ 23. A result of mere feeling we saw could not be an inference, since it was not ideal. But the result of *imagination*, it may now be urged, is often ideal. It may keep itself distinct from mere emotion and desire, and may present us with a pure perceptional series. In such a case as this can imagination be called inference?

We must deal briefly with this question, for it tends to divert us to matters of great interest which may here be neglected. And we may answer at once, No result of mere imagination can be an inference. It can not be a conclusion, because it is not a judgment. The production of imagery may no doubt follow strictly the logical sequence to a certain point; but there it breaks off. For instance A*b* may proceed to a result of fancy through logical functions $b-c$, $c-d$; but the result when obtained is now not integrated logically with A. On the contrary it appears as an individual image D, and that image is not a predicate of A*b*. It certainly stands in relation with A*b*, but it falls into that relation through psychical co-existence; and so once more we have conjunction without connection.

We have no judgment, since the result is mere fact which exists in the mind, and since it is not a symbolic content referred away from its own existence. It exists and it stands in certain relations, but it is not taken as an adjective which is either true or false. And then the given A, with which we

started, does not survive in the result; it does not appropriate the content and use it as its attribute. That content breaks its logical bond, and, wandering off into the psychical space, begets by contact with beings external to A an independent substantive D; which, itself autonomous, has now a substantival relation to A. Hence we have no logical unity in the object, no ideal individuation.

§ 24. Imagination is certainly not free from logical processes. Its trains, no doubt, throughout a great part of their length may consist of the strictest intellectual sequences. They may contain few images, and but little save the purest symbolic ideas. Yet somewhere we find a solution of continuity; somewhere the identity of the *datum* is lost; at some point we pass from the adjectival content attributed to our basis, and slide into an image which is not its predicate. And with this break, wherever it comes, we have left judgment for fancy, and are not concerned with truth but with psychical fact.

It would no doubt be interesting to pursue this enquiry; but the interest would, I think, in the main not be logical. It would in the first place be psychological, and then perhaps æsthetic. But the broad distinction, that what is merely imagined is not held to be true, removes imagination from the province of logic. We shall however be forced to touch again on this point when we deal with the early developement of reasoning (Chap. VII.).

§ 25. Inference then, so far as we have seen, is an ideal experiment which procures a result from a given basis. This result is a judgment in which the new product is predicated of the given. And in this whole operation we have found that identity which our Second Book perceived to be essential to the middle construction. But our enquiry so far has stopped short of the goal. We are naturally still curious about this middle process. We still ask Is there not some central identity to be found in this? And we shall take up this question in Chapter V.; but, before we can answer it, it is necessary to inspect our types of inference and to reduce them, if we can, to some more general form

CHAPTER IV.

THE MAIN TYPES OF INFERENCE.

§ 1. In our Second Chapter we detailed a number of intellectual processes, all claiming to be inferences. These processes present us with many varieties of that middle operation, which we have seen is one essential part of reasoning. In the present Chapter we are to neglect many questions. We are not, for instance, to say anything about the validity of these processes, nor to attempt to reach their ultimate nature. We shall be content, if we can show throughout their detail two or three main types of ideal experiment.

There are two general classes we can at once point out. The operations we mentioned seem to fall under the heads of synthetical construction and analytic elimination. We may at least say of these, that we find no inference which does not contain one of them.

§ 2. In that form of reasoning which is most familiar we verify the presence of both these activities. Thus from A – B B – C we go by a synthesis to A – B – C, and then use elimination to bring out A – C. The preparation which precedes the final intuition, has thus two aspects. But on the other hand this does not seem to hold good with *all* types of inference. When for instance we argue without elision to a new quality of the whole (as was the case when we discovered our island), we seem to employ construction alone; and in abstraction again we do not seem to use construction at all. There is no apparent synthesis when we analyze the given, and eliding one part then predicate the residue. Yet this is not the point we are at present concerned with. To ask whether, and in what sense, the isolated employment of one function is possible, would here be premature, and at present we

may be satisfied if one of these processes can be discovered everywhere. We shall proceed to assign our list of operations each to one head, but must not be understood to exclude it from the other. Thus we shall call an inference synthesis or analysis, according as each type appears more prominent in each case.

§ 3. (A) Let us begin with *construction* and see what processes will fall naturally under this. (i) Those syntheses of relations which group themselves round an identical centre, will take the first place. Whether they end in a new internal relation, or remain joined in one whole, or proceed to a new quality, in each case their most prominent aspect is synthesis. The first class of constructions are those which are based on an explicit identity, which so to speak forces the extremes together.

As compared with these all the rest seem arbitrary. For we have in none the bond of a given centre, while in some it is doubtful if any kind of centre exists. The ideal unity is not anywhere prescribed to us beforehand. In some cases it looks as if the operation were capricious; and it is a question, to which we must hereafter return, how far the conclusion can stand either with or without this operation. Since at present these constructions seem not necessary like the first, since their middle term, if they have one, appears our mere choice, we may distinguish them here as arbitrary syntheses.

§ 4. As such (ii) we recognize addition in Arithmetic, and the geometrical extension of figures. In each, under differences, we find the same process of free rearrangement. I obtain a result by composition of elements, and that result is held true of the elements themselves. The same holds with Comparison. There I bring the terms together, I unite them under a certain aspect, and I then see a quality which I proceed at once to predicate of these terms. In the process of Recognition I may seem less at liberty, and still less free in Dialectic reasoning: but in both cases the main feature is the construction of a whole—a construction round a centre, which is not given, into an unity not prescribed by the premises.

§ 5. Our material so far has arranged itself under the head

of Construction; and the synthesis seemed in some cases to be necessary and in others arbitrary. We pass next to the consideration of that other main type which is the counterpart of the first.

(B) The essence of *analysis* consists in the division of a given totality, and in the predication of either the whole or part of the discrete result. In the latter case the presence of Elision is manifest, but even in the former it is to be recognized. When reality first appears as a whole and then as a number of divided units, something certainly is gained but something else is eliminated. For the aspect of continuity or unity is left out; and thus mere analysis always involves and must involve some elision.

The first example of this class may be found in Abstraction. We are burnt, and proceed from this experience to the result, Fire burns. We have first reality as giving the whole complex, we have next the elimination of all content, save two elements in connection, we have thirdly the predication of this residue; Fire burning is real. The validity of the process is open to grave doubt, but it consists in analysis followed by elision.

Arithmetical subtraction shows the same features. Reality gives us an integer five. We then divide this into units, and, removing two of them, get an integer three, which we predicate of reality. And we assume here once more that the units are not altered by the disruption of their context. This assumption may be false, but the process is clearly one of elision.

In Distinction we seem to have a new variety, but we still may find the same general outline. We are presented with elements which are taken as one. Altogether, or with reference to a part of their content, they come before us as a whole, obscure no doubt but still unbroken. In the result of the operation this whole has vanished. A and B fall apart and appear as divided, entirely or in respect of one or more attributes; and then this result is attributed to the original reality. We shall once more neglect the suspicion which such an assumption excites. Confining ourselves to the general character of the operation employed, we are able again to

verify our type. A totality is divided by a function of analysis, and ignored in the product by an act of elimination.

§ 6. We have seen so far that all our examples fall under two heads. Can we advance to the conclusion that inference consists in two main processes, construction and elision? Our way is barred by an unforeseen obstacle; for we have not yet dealt with Disjunctive reasoning. And it is impossible to reduce this wholly to either process or to a mixture of both. Both indeed are concerned in it, but they do not exhaust it.

If the alternatives are given us with an explicit statement of their reciprocal exclusion, and of the sequence of each from the absence of the other, in that case we do not find a new principle of reasoning. For one of our *data* removes a possibility, and that removal does, by virtue of another *datum*, assert the remaining possibility as fact. In "A is *b or c*" and "A is not-*c*," by combining our premises we bring in not-*c*, and so banish *c*; and, this affirmation of not-*c* being elided, we can then join *b* directly to A. Thus where the "or" is *explicit*, we have nothing which falls outside our two principles.

But suppose we start with possibilities not given as strict alternatives. If, for instance, A may be *b*, and again may be *c*, and can be nothing else; and if we further suppose that A is not *c*, what conclusion can we draw? Can we go to *Therefore* A must be *b*? We do indeed make this advance, but the advance is made on the strength of the fresh assumption that any unopposed possibility is real. And this means a new principle. For here what we predicate is not the residue of truth, but the remainder of chance. We attribute to the real, not something first given and then worked upon by our act, but an issue from premises which afford nothing positive. We do not go simply from the mutilation of a whole to the acceptance of a part, but we also leap from the possibility of that part to its unconditional existence. This principle, which we before had need to mention (Chap. II. § 26), and which will engage us hereafter, will not fall under the head of either analysis or synthesis.

§ 7. Disjunctive reasoning may employ all three processes, but it certainly need not do this. Where alternatives are explicit, we have seen that it is content with the use of two.

And there is another instance where two are enough. For where the process is *ponendo tollens*—where from "A may be *b*, and A may be *c* (though not both), but A is *c*," we advance on the strength of an ideal synthesis to "A excludes *b*"—we are not forced to cross from the possible to the actual. We remain in the latter, and the exclusion of the possible is, as such, no real quality of A (vid. Book I. Chap. III.).

But in other cases three movements may be seen. The argument constructs and then eliminates; and in the end the residue is predicated with a vital change in its character. Under this general type, which calls in the third movement, we may point out several varieties.

In the first of these (§ 6) the possibilities are given, not as explicit alternatives, and yet as together exhausting the subject; and also along with these possibilities may be given the actual exclusion of one. This is the first variety. In another we are left to make a complete exhaustion for ourselves; and again in another we may have no possibilities given us, and may even have no statement of exclusion. In this last extreme case we are reduced to operate with mere *suggestions*. Thus if on trial *b* is found possible, and A excludes the suggested *c*, *d*, and *e*, and if in the end we can find nothing else which we are able to suggest—then we advance to the conclusion, A must be *b*. We have conjoined *b* with A, have eliminated the rest, and have boldly leapt from "may be" to "must be." Here the exhaustion was not guaranteed, nor the exclusion given. Our *datum* was A; and it was we ourselves who constructed the whole, assumed its completeness, elided one part, and then sprang to the actuality of our product.

In all these latter varieties of disjunctive reasoning, we have first synthesis and then elimination, the whole consummated thirdly by a transition to fact from mere possibility.

§ 8. In this last section we have already provided for Apagogic inferences (Chap. II. § 29), and have finished our rapid survey of the principal classes of reasoning. We may now present the result in a tabular form, asking the reader to bear in mind one thing. He must remember that, when a process is referred to one head, he is not to assume that the other type is absent. We are to class each operation by its more prominent

feature, and to neglect for the moment our additional step from the possible to the actual.

A. *Construction.*

(i) Where the whole is made *out of* the *datum*	(α) necessarily.[1]	
	(β) arbitrarily.[2]	
(ii) Where the whole is made *beyond* the *datum*	(α) necessarily.[3]	
	(β) arbitrarily.[4]	

B. *Eliminative analysis.*

Where, the whole being given, the elision is	(α) necessary.[5]	
	(β) arbitrary.[6]	

We may enumerate the processes here presented. We have in No. 1 the three-term inference which we first discussed. In No. 2 we find addition and comparison. No. 3 gives us recognition and dialectic movement. With No. 4 we reach determination (positive or negative) by means of a suggested possible synthesis. Thence we come in No. 5 to that disjunctive reasoning where the possibilities are independent and one is excluded. Then No. 6 closes the rear with abstraction, distinction, and arithmetical subtraction.

We may append three remarks. The first of these is that the Hypothetic judgment may be assigned to No. 3. It may be said, no doubt, that we are at liberty not to suppose; but then on the other hand we also elsewhere are free not to think. The premise is a *datum* not given as real; I treat it logically, and thus get a result which I conditionally predicate. But nothing here is my choice, save the resolve to suppose and then to see what logically comes. But so much choice as this seems to exist in all reasoning, since everywhere it lies with ourselves at least to think or not to think.

In the second place addition and subtraction will be necessary where the quantities are given marked with *plus* or *minus*. But their result in this case is hypothetical. The signs do not belong to the nature of the quantities (Chap. II. §§ 6 and 10). And the reader must remember that free spatial rearrangement falls under the heads of 2 and 6.

And the third remark we have to make is this. The process of suggesting possible predicates, and of then proving one by excluding the others, may be regarded as a mixture

of Nos. 4 and 5; but it is not worth while to place it in a class by itself.

We may end by stating briefly the conclusion of this Chapter. The middle operation of every inference consists of analysis or synthesis, or both; and in certain cases it invokes besides an additional principle.

CHAPTER V.

ANOTHER FEATURE OF INFERENCE.

§ 1. We must search into the nature of these general processes, but there is a question which presses for immediate answer in the present Chapter. We supposed first of all that every inference was a construction round an identical centre. We have since then discovered that reasoning demands a self-same subject, that appropriates the difference got by the experiment. But we must return to examine the middle operation, the experiment itself. We now know that our first supposition needs correction, since the experiment is not always a construction through a *given* identity. But this result does not satisfy us. We want to know if our middle process can ever dispense with *all* identity. There clearly is not always an *explicit* common term; and when this fails shall we say that everything has failed? Or can we still say, there is an *implicit* centre, unavowed but active? Our instinct leads us to embrace this latter suggestion.

§ 2. But how shall we support it? There is obviously some unity in the operation, but it is doubtful if this will give us what we want. Mere togetherness (so to speak) before the mind is clearly insufficient; and we must hence take the mind itself as a centre, not given but used, and see if on this line we can make an advance. We may say, "In all relations, where the terms are able to be separated in idea, the relation may be considered as an interrelation. The result is an inference, a putting together of elements which before that inference existed apart. And since those elements were all related to one mind, and because of that unity now come together, the mind may be taken as a common centre of interrelation." Is this what we want? We must answer in the negative; for though I believe it to be true, and a truth whose importance

can hardly be exaggerated, yet in its abstract form it is simply irrelevant. It tells us that some relation of some kind exists between all objects of thought, and that they are all interrelated. But then this knowledge must fall outside of any *special* inference. Thus A and B are called equal *because* I have compared them; but, before I compared them, I might have known that *some* relation must exist between them; and this knowledge is therefore not the reason why I now know that they are *equal.*

§ 3. From *mere* interrelation you can make no passage to a *special* relation. It does not matter how actively the mind may work; you may suppose an intense appreciation of the fact that we have a common term in the mind; you may postulate any degree of attention, or the preferential application of the intellect to this fact—yet from these general premises you never will get to the particular conclusion. For the centre of the operation, if we are to find it at all, must be found in the unity of that special operation. We can not settle such a point by abstract reflections, which at the most serve to raise a vague presumption in our favour. If we wish to exhibit the identity in our processes, we must be prepared to show the central point in each particular case.

§ 4. Let us start with what we called Recognition and Dialectic. The given here is $A\gamma$, and the mind meets this with a function γ–δ, which extends A to δ. The central point is here obviously γ; and round this point, and by virtue of its identity, A and δ are brought together. We must notice however that γ–δ is not given, and further that γ–δ may never be explicit. Our consciousness may pass straight from $A\gamma$ to δ. It may never suspect the presence of that common middle term on which everything depends. Hence we might say that we have subsumed the original *datum* under a function of synthesis, which never appears except in its effects: but this statement would be incorrect, since the process is not a subsumption at all. It is a construction by means of a hidden centre.

This seems tolerably clear, and it gives us a principle to which we must hold. But in its further application the truth becomes much more difficult to see.

§ 5. If we consider the operations of Comparison and Distinction, we are at first unable to perceive any middle. The mind, we may say, is the point which compares, and the centre which separates; but such a mere generality, however important, we agreed was not the answer that is wanted. The question is whether in the process itself we can find a special interrelation; and we shall now make this attempt.

Both the processes exhibit a double aspect of unity and diversity. In Comparison this fact is at once apparent. In "A = B" we have of course the differences of A and B. These differences are held together in relation, and are combined on the strength of a common point, since the *quantity* of A and B is the same. Thus the relation of each difference, A and B, to an identical quantity is the very ground of their interrelation. Take that third term away, and the connection vanishes; reproduce it, and the mind requires nothing else in order once more to construct the relation.

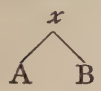
But is it so too with Distinction? Take for instance, "A is not equal to B," and where is the third term? I answer, It is there, though we do not perceive it. For consider the case thus; A and B, it is certain, are still related, since they are taken as different; and their difference is not abstract but specific and definite. It is *as quantities* that we fail to find them identical. But, this being grasped, observe what follows. Just as the general perception of difference implies a mind which distinguishes, and which serves in some vague character as the base which supports that *general* relation—so it is with every special difference. What is true in general will prove true in particular. All objects of our thought in the first place must have *some* relation because, as our objects, they are all identical; and again every distinction of special qualities, such as sounds or colours, takes place on the basis of a special community. For instance, the separation of red from blue must imply the unconscious taking of each as a colour; and that felt common quality is the basis upon which the separation is effected. It is thus too with quantities. A and B are perceived to be unequal, but inequality presupposes that both have quantity. In this they are the same, and it is because of this point that they can be seen as unequal. Thus

identity in regard to the possession of quantity is here the third term that was required, and it is relation to this centre which interrelates the quantitative differences. In short distinction can never be effected except within an area of sameness; and, once outside this area and common meeting-ground, the relation would vanish.

§ 6. Perception of identity and perception of difference are two modes of one function or two functions of one process. The result in both cases depends on a synthesis of diversity with unity, but with this likeness there goes a striking contrast. Take first Comparison. Here we start with the difference, and at the end this difference has been partially lost, and the identity of the terms has become explicit. It is otherwise with Distinction. We begin here with a vague and undiscriminated unity, but in the conclusion the differences appear, and the identity has passed away from our sight. In both processes alike the sameness of the terms is the middle point from which everything hangs; but that centre is used in two diverse ways. In the case of Comparison it is the receptive identity which, standing opposite to external differences, takes them into itself. Content with a partial recognition of its power, satisfied with a declaration made by the differents that in some point they are the same, the unity slurs the remainder of diversity, and becomes the mere relation of similars. But the process of Distinction shows a contrast to this. The identity here turns against its own unseen differences, and makes them explicit. It pronounces the relation which sunders them apart, and is led, by the emphasis of this its own activity, to forget its own being. Thus the differents appear as independent varieties, which subsist and form relations in a passive atmosphere. The identity which has generated them, which separates and supports them, is slurred even more than in the former case diversity was slurred by Comparison. We might say that one tends to think less of the relatives and more of the relation; while the other quite sinks the active relation, and keeps its eye on the terms related.

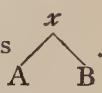
§ 7. In the ensuing Chapter we shall return to this point but at present we may try to develope our meaning. In

Comparison and in Distinction we employ certain functions, and you might say incorrectly that these processes consist in subsuming the given under certain activities. What are these activities? In a clumsy fashion we may represent them as follows. In Comparison we apply to the original *datum*, A and B, a function of synthesis,

. Through the possession by A and B of the qualities *a* and *b*, we unite them in relation to our common point X. The result may be depicted as 

; but, since the unity is degraded and becomes a relation, the conclusion which appears is simply A – B.

For Distinction we must bring in another formula. We may be said to start with a vague totality, in which is latent an internal diversity; and we may represent this *datum* as

. To this unity we apply a function of analysis 

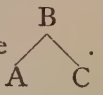
. Then on the one hand X, now identified with *x*, becomes less visible; while, as this fades away, the other side appears, and *a* and *b*, developed by the application of the function, appear as A and B. The immediate result is

, but, since *x* is wholly slurred, A and B fall apart as separate facts which show a distinction.

§ 8. It would be interesting to enter into the finer metaphysical detail of these processes; but we can afford no more than a mere passing remark in protest against an obstinate prejudice. In answer to the doctrine that sameness and diversity imply one another, *at least when perceived*, we shall be told that Difference is independent, and derives its origin from the shock of change. And for the apprehension of this shock, it will be added, no activity is required. Thus we have no ideal operation at all, and may so dispense with the illusion of an ideal unity. But this objection, I must reply, depends upon a complete mistake. It partly confuses feeling with perception, and partly is wholly

wrong about feeling. I will take the second of these points first.

If a shock is intended to be *felt* as a shock (and I suppose it must be so intended), then the feeling must be compound. There must be some feeling to start with, in collision with which the inrush of new feeling disturbs the mind. For if the place were quite empty the new arrival might appear, but could hardly make a striking sensation. Thus the shock presupposes another element, and it implies the felt relation of both. But, if so, once more we have found in this relation a point of identity, a common sameness not of perception but of feeling. In other words it will be the continuity of the feeling which makes us sensible of the change and the shock; and this is our first point.

But we have not yet reached the *perception* of change, and the failure to see this is the second point of error. Think what you like about the felt shock, you are yet a long way from the consciousness of difference, and you can not advance without calling in an ideal identity. Take a sensation A, and let it change to a wholly different C. This will give you the succession of two psychical events, but not the perceived relation of change, and the question is how this relation can be given. It can not be given without *retention*, and retention is not possible unless what precedes and what follows possess some point in common. But let AB (for example) be followed by BC, and the problem is solved. Here the identical B redintegrates A; or (if you prefer to say so) the retention of AB gives us A with a point in common with C; and, in either case, we have a result which we may write 

. No change can be perceived unless by means of an ideal continuity.

§ 9. This ideal identity is a necessary element in the perception of difference. Without such a centre the extremes would never be held together, and their relation would never come before the mind. We may represent as follows the mode in which this unity operates. In a whole $\overset{A}{b\ c}$, as it passes before us, the difference *bc* is not at first noticed.

Hence we do not perceive *b* and *c* to be disparate, till we try to identify them. But, in going from A*b* on to A*c*, the self-same A reproduces *b*, which, thus forced upon us in identity with *c*, is rejected by it; and then, A retiring from view, we perceive the difference as B against C.

How then do we become aware of identity? We must have differences B*a* and D*a*, and we must feel, when we pass from one to the other, that they are not *all* different. This feeling comes from the presence of *a*, which is not yet explicit. It rises to explicitness, through the reproduction of B, and the consequent collision of B with D. By means of the alternate rejection of these discrepants, the common identity *a* is set free; and the relation of similarity between B and D is brought clearly before the mind. We may be said to begin with an implicit sameness, then, by working with that, to make our implicit difference visible, and from this visible difference to return back to sameness, bringing out in our movement a relation of similarity, and perhaps in addition a seen and explicit point of identity.

We can not further pursue these enquiries. For our object is attained if we have succeeded in showing that, alike in Distinction and in Comparison, we obtain our result by an active centre which stands in relation with both the extremes.

§ 10. After leaving the perceptions of sameness and difference, we come next to the processes which depend on these perceptions. There are a number of remaining inferences which consist in re-arrangement, in the new grouping of elements within a whole. And here we may make a broad distinction. If our fresh distribution starts from analysis, then the process falls throughout within that whole which is given us at the start, and this whole will be the unity, relation to which interrelates the elements. But if on the other hand our re-arrangement demands a construction outside the original *datum*—if, that is, we must first extend what is given by addition of fresh elements, before we are able to find our conclusion—in this case our *datum* is not the whole required. The entire ultimate construction implies a fixed ideal centre of its own, and the extension and re-arrangement will therefore take place within a whole which includes

our *datum*, a whole which, though invisible, still is active. We must apply this general truth to our detail.

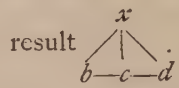
§ 11. If we consider the free construction of elements in space, we find at once that this movement implies a centre of identity. Unless the extended parts that we deal with came into one whole, our process would be nugatory. We should begin and end with mere isolated fragments, indifferent to each other, neither united nor yet sundered by spatial relations. Our conclusion implies that the elements, we begin with, are members of one space. But, if they belong to one extended whole, they either must have identical points, or must all be connected with some common centre. So much is clear, and will perhaps be admitted. On the other hand a serious difference of opinion would at once arise, if we asked where the middle of space can be found. Is all motion merely relative? Is there again an actual existing centre by which all else is determined? Or is not this point of reference merely ideal, something that does not and indeed that can not exist? But we need not answer these questions here. It is enough if we agree that all spatial grouping, perceived or imagined, implies some kind of common focus, whether that focus be before us explicitly, or whether it be a mere unconscious implication. But, if so, it is clear that our new relation springs from inter-relation, and depends upon a point of identity.

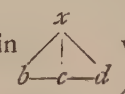
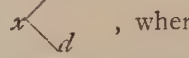
§ 12. And the same thing holds when we come to Arithmetic. When an integer is divided the analysis takes place within the limits of that unity, and the elements are separated from that centre of dispersion. The point of inter-relation no doubt disappears in the product which we see. It becomes invisible; but if you removed it wholly, you would find that your discrete units had vanished. They would in this case have lost the common relation which keeps them apart, and gives them their show of independence. But just as here continuity is active in the production of discretion, so again, when the discrete returns once more to explicit oneness, an implicit *continuum* is presupposed. If the units had no relation to a common centre, they never could be added. Let us consider this last statement.

Even if we adopt an erroneous view, the truth of our

statement will still be plain. Let us suppose that the units have no relation amongst themselves, but are simply pushed together by the action of the mind, or fall together in the mental space. But, in the latter case, how could they all fall towards one point, if they were not co-partners of one spatial world? And how once more could that world be single, if it had not got some kind of centre? And, in the former case, where we suppose that the mind is an external agent which forces the unity, it surely could not act upon all the units unless each single unit were related to this one operator. Nor again would this one *special* operation be performed, were it not that the agent stood in one special attitude to all the pieces of material. So that, even if we accept such mistaken views about addition, we are still compelled to believe in an interrelation.

But in reality the units are not independent, nor need we invoke external violence to crush them together. For they arise and they consist in the suppression of an integer, and would not be many if they were not thus one. Their relation to each other is the degraded form in which their ideal continuity is manifest; and, when we think out this onesided appearance, we are forced to advance. The discretion of the units implies a connection of each with an unseen centre of repulsion; but that means on the other hand their common interrelation by virtue of this unity, which so reappears as the integral whole in which they subsist. We can see this even when we take at haphazard a number of units and increase it at our pleasure. I will not ask *how* we are able to do this, though the answer to that question might help us forward. Suppose that *somehow* the new unit is got. Yet, before it is added, it must have a relation to the units that exist; and this relation implies a common world of number, and a central point. If this were not present the mind could not add; and therefore the addition makes explicit an ideal unity which was active though latent. It is on the strength of this idea that the mind can work and can make the idea visible. Continuity is no ghost, that is laid in the units and conjured up to surprise us in the integer; it is the soul which unseen is felt in the limbs, and returns to the centre with a fuller life.

§ 13. Abstraction is the process which next claims our attention. It first involves a function of analysis. In A we distinguish *b*, *c*, and *d*, and we may say that we start from a datum *x*A and then proceed to a result  . This, we know already, has been got by means of an identical centre and still implies it, for the unity A has been sunk but survives.

Let us proceed to the next step. We take *b–c–d*, and rearrange these elements, and so get, by fresh grouping, *b–c* on one hand and *d* on the other; thus, *b–c* | *d*. Now identify the *b–c* and the *d* in  with the last-gained result, and we reach the conclusion  , where each relation to *x* seems independent of the other. One or more of the elements, which analysis showed within the whole, are identified with elements that appear outside the whole, or are independent of it. We have here Subtraction or the Method of Difference.

But our process still implies a centre of identity, since the grouping, whether it conjoins or separates, must be carried on from one common point of attraction or repulsion. That point however will, according to the case, be manifest or invisible.

§ 14. And coming in the end to Disjunctive Reasoning, under which head falls the Apagogic Method, we may verify once more our general law. Where the possibilities are given us within the unity of the given subject A, it is solely because they are identified in this, that *b*, *c*, and *d* are found to be discrepant. Their relation to this centre thus interrelates them. And, in the further operation of removing one part so as to predicate the residue, our construction and subsequent elimination must rest on the basis of an ideal mid-point. We have discussed this already by anticipation, and it is not worth while to repeat the argument.

When once more the possibilities of A are not given us, and when we make them ourselves by a free suggestion, then so far the process is constructive synthesis. We should not

think of c or d in connection with A, if there were no reason for their appearance. And the reason lies in common points of sameness γ and δ. It is on the strength of these that c and d are connected with A, and when we find that the suggested connection will not hold, we can discover that it was a mistaken inference upon the ground of identity.

§ 15. The result of this perhaps too brief survey may be summed up thus. Not only does inference preserve an identity throughout the whole process, but in the actual experiment itself we rest upon a central sameness. There is a point of unity in every operation, and each special operation has a special point of unity. We have thus recovered that earliest view with respect to inference, which seemed torn away from us. But it does not return intact. We can not call the conclusion in all respects the necessary outcome, and we have not got a given point in two given relations, which thus interrelates them to form our conclusion. That conclusion in some cases, we have seen, is not made unless we *choose* to make it; and the arbitrary character inherent in these processes gives rise to doubt and to grave suspicion. In the Second Part of this present Book these doubts will be considered: but we must first endeavour more exactly to apprehend the operations we have just been passing in review.

CHAPTER VI.

THE FINAL ESSENCE OF REASONING.

§ 1. If, considering once more the processes we have surveyed, we ask for the principles which underlie them, we discover first of all the Axiom of Identity. What is true in one context is true in another, and what holds of a subject within an experiment is valid also beyond that experiment. And when, advancing from this, we approach our array of ideal operations, we see that they fall under analysis and synthesis. These, if we take in that other principle of movement, by which we go from the possible to the actual, seem to cover the ground of all our material. On the Axiom of Identity we propose to say nothing more at present, but there is much in the rest which remains unexplained. Let us for the moment dismiss the principle of transition from a surviving possibility, and let us turn our attention to analysis and synthesis. Although at the cost of a partial repetition we must try to penetrate their more hidden nature.

§ 2. We may begin by asking an obvious question, Are these two operations really two, and, if so, in what sense? Are they unconnected, that is, and two alien species of a single genus, or have they something in common beyond the universal type of inference? The answer to this question leads straight to the conclusion which we are to reach. We shall try to show that analysis and synthesis have so much in common that they are actually identical. They are two different sides of one single operation, and you never can have one without having the other. Hence though different they are the same.

§ 3. And they are the same in this way. Take an act of analysis in which A becomes (A) *bcd*. The elements in the result come to us as separate, but this very separation involves

a relation. They are distinguished by virtue of a central identity, and they stand thereby in some kind of relation with one another. But this relation is synthetical. It did not exist before the operation, and has resulted from it. Thus the analysis, whilst analyzing, has shown itself synthesis.

Now take an act of synthesis. We have A – B, B – C, and from this we go on to produce A – B – C. We have got to a relation which before was absent; but our process is also an act of analysis. For A, B, and C are now related within a whole: these terms and their relations are the constituent elements of the whole A – B – C. And yet, as these members, they did not exist and could not exist till that whole was realized. Thus the synthesis has analyzed while it seemed but to conjoin.

Summing up the above we may state it so. Analysis is the synthesis of the whole which it divides, and synthesis the analysis of the whole which it constructs. The two processes are one.

§ 4. But with all their unity they are still very different, for they are opposite aspects and sides of one movement, and are held apart by three special diversities. In the first place (i) the given material is different. In the second place (ii) the product is not the same. And finally (iii) the operation of which we are conscious differs in each case. Let us take these in order.

(i) In analysis, first, we do not go beyond the area which is supplied at the beginning. The whole is given, and we work upon that whole to produce a synthesis of elements within it. We do not travel outside our explicit starting-place, and hence we may say that analysis is the *internal* synthesis of a *datum*. But in synthesis we find that the opposite holds good, for the whole is not given any longer, but is made. Our act is the analysis, not of our visible starting-place, but of something implied, unseen, and ideal. In other words the totality emerges for us in the product. Thus in analysis we operate upon an explicit whole, and proceed to its invisible inside. In synthesis we begin with an organic element, or elements, not seen to be such; and passing

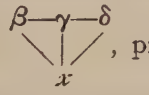
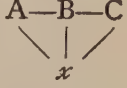
beyond each to what is outside, so bring out the invisible totality which comprehends them. This difference of start is the first point of diversity.

§ 5. And it leads to the second (ii). As the material supplied is in each case different, so again the product is not the same. In one case the whole precedes and is followed by its internal relations ; but in the other case external relations come first and so produce the whole. Where the result appears as the further determination of a given element by something outside it, the process is synthetical. Where the result gives a view of something that lay hid within the given, the process is analytical. Thus it is analysis where your conclusion falls within the boundary of your original premise ; but it is synthesis where the conclusion falls beyond each premise and transcends its limits. Analysis is the inward synthesis of a *datum*, in which its unseen internal elements become explicit. Synthesis is the analysis of a latent whole beyond the *datum*, in which the *datum* becomes explicit as a constituent element, bound by interrelation to one or more elements likewise constituent. This is the second diversity.

§ 6. And the third is implied (iii). For with each we are conscious of a different side in our one operation. In analysis we do not keep sight of the synthesis, and in synthesis we forget the act of analysis. In the former case we start with an unity, we break this up by a function of diversity, and ignore in the result both the unity that was given and the function that was applied. The product presents us with separate elements ; but these elements were *got* by ideal discretion operating upon an original continuity. This given continuity, and this ideal discretion, are not visible in our conclusion ; though implied they are latent. But in synthesis the unity, latent at first, becomes explicit in the end, and what we ignore is its previous activity. The construction, that was wrought on the original discretion, was the ideal function of the final unity. But this we forget, and at last are unaware that the elements, which seem to have *made* the whole, can more truly be said to have been found within it. Let us try to state this otherwise.

We may say that in analysis the given becomes the

continuity of fresh discretes, while in synthesis it becomes one single discrete in a new seen continuity. But our consciousness of this process is in each case fragmentary. For in one we ignore the continuity of the product, and in the other we forget its once helpless discretion. In analysis we employ a function of plurality in unity, in synthesis we use a function of unity in plurality; and we do not *see* either. In the result of the first we throw away the continuity on which we worked; and emphasize only that hidden discretion which before was latent. In the result of the last we reject the original hopeless discretion, and emphasize that continuity which, with its ideal activity, we before ignored. In both analysis and synthesis what is used is not seen. An unseen discretion is the agent which procures for us known discretes, and an implicit continuity makes behind our backs an explicit *continuum*. But, if so, in these processes we have found difference with identity, identity with difference.

§ 7. If we do not object to clumsy forms, we may symbolize our general doctrine thus. In analysis the given A, *plus* function , gives a conclusion $b-c$. But in the result we forget that β and γ have no validity except within x; and that hence $b-c$ must imply the whole A. In synthesis again we start with A – B, B – C; and this *datum*, *plus* a function  , produces A – B – C. But here we forget that, without our function, A – B and B – C stand sundered by a gulf; and that in our result, where they appear in unity, they are really the analysis of a whole  which before was latent.

It is, I think, scarcely worth while to enlarge on this head. We perhaps have said enough to show how synthesis and analysis are essentially connected. With all their diversity they are but different sides of one radical principle.

§ 8. If this is true when we apply the principle unconsciously, it continues to be true at a later stage. We may deliberately adopt the so-called Analytic or Synthetic

Method, and there is of course a real difference between them. But the result is always a two-sided product. In the Synthetic Method we begin with first principles, which are stated explicitly, and work our way down to the individual facts. We thus constructively build up a whole ; but all the while we are unconsciously analyzing. In carrying our principles out into the detail, and in showing the detail as a consequence of those principles, we are really breaking up the vague general idea with which we started, and our whole developement may be taken as setting forth the particulars of this implicit whole. The same twofold character exhibits itself when we apply what is called the Analytic Method. Starting here with the confused appearance of the whole, we break up and pierce into its sensuous concretion. Thus we make our way to the relations of elements more and more abstract, what in short are termed Laws. But these Laws are syntheses ; and thus the analysis which, if fully carried out, would be the entire destruction of the first confused whole, reconstructs that whole as a world of abstract connections. It is everyday experience that the analysis of a subject shows its internal unity.

This reflection may prevent our staggering at the truth of a weighty paradox ; "Knowledge advances from the abstract to the concrete." The confused whole, that is, which comes before our senses and pours out its riches, goes bankrupt when we refuse to accept such payment and insist on receiving universal truth. Or, we may say, the felt concrete, when distilled by thought, yields at first but a thin and scanty result. The intellectual product, which first comes over, is a connection whose actual truth holds only of a fraction of the subject. It is not till we have gone further down to principles, that our intellectual results spread over the whole field and serve to unite the mass of detail. In becoming more abstract, we gradually reach a wider realm of ideas ; which is thus not sensibly but intellectually concrete. What is abstract for one world is concrete in the other.

§ 9. At this point, when we remember some too hard sayings on the comparative worth of these different currencies, we feel tempted to digress and humbly to protest.

But we must hasten onwards, for we have now to make another remark on the reciprocal implication of these two Methods. Induction is of course considered to be "analytical;" but, if we understand induction in its primitive sense, and use it for that collecting of instances which gives an universal, the synthesis is obvious. For we not only get internal connections in our given material, but, travelling far beyond it, we take it as one member in a group of instances. Beginning with the individual case we are investigating, we go on to others of the self-same nature. We subsume under the universal which we have implicit in our original *datum*. Thus unawares we are using a synthetic construction from an identical point; and, by the actual employment of this latent universal, we make it in the end explicit and visible.

We may find the same unconscious substitution of process in our use of the Synthetic Method. When facts are explained by the Synthetic Method, they are actually analyzed. We reconstruct the phenomenon which we have under enquiry, and build it up ideally by an union of elements, and thus show it as the intersection-point of our Laws. And this is not all. Our synthesis never quite exhausts the fact; there is left an unessential, sensuous element, which is put on one side as irrelevant matter. And this residual product, left by the analysis which dissects the fact, may be highly important. In comparing it with our ideal reconstruction, we may find a vital discrepancy, before unseen. In this way our rebuilding, with its subsequent contrast, may disclose a feature in the case which otherwise would have escaped perception. Our synthesis has once more, and in this additional respect, turned out analytical.

§ 10. It is not in principle alone that analysis and synthesis are essentially one, but in practice also their unity tends to show itself in the product. Performing one operation we find that we have also accomplished the other; and we may err in our estimate of the relative importance and prominence of their aspects. As an instance of this blindness, I should like once more to bring on the stage the so-called Analytical Psychology. There is no doubt that this possesses a right to its name; for its object is to resolve the phenomena

of the soul into groupings and blendings of simple elements. But it is blind not to see that its procedure is just as much synthetical, since, starting with certain elements and their laws, it attempts to reconstruct and build up ideally the complex facts that are actually experienced. And this process is of course the Synthetical Method.

This criticism holds even if we admit every claim put forth by our English school. Even if the original elements and their laws have been got by means of a preliminary analysis, it may yet be true that in subsequent practice the analytical reduction of particular phenomena is effected *a priori* by a constructive synthesis. The "analysis" for instance of visual extension does not proceed by anatomy of what is given, but rather by the selection of factors which together might have formed it. Thus when the claim of the school is fully admitted, we must still point to blindness; and it is possible to take a more unfavourable view. The elements, it may be said, if reached by analysis, are reached by an analysis which ignores important tracts of the subject. And again in part they are not reached by psychological analysis at all. On the contrary they are importations of coarse physical ideas, unacknowledged borrowings from crude metaphysics, preconceptions introduced without any warrant. The analysis is in short accused of resting on a vicious construction *a priori*.

§ 11. We first saw that all inferences could be reduced to the acts of synthesis and analysis, *plus* another function. We have now seen that analysis and synthesis are branches from a single stem. And it is time that we turned to search for the nature of this other element. But we are tempted to make first a fresh enquiry in connection with the processes which we have just discussed. If analysis and synthesis are thus entangled at the root of reasoning, what bearing has this on another question which we asked before (Chap. III. § 11). There was a doubt if every judgment was not an inference, and the doubt seems now to have gathered strength. For it may be asked, Does not every judgment involve a synthesis and analysis, and, if so, is not each one therefore an argument? We will begin with the first question, and then take the second.

§ 12. Let us imagine a judgment before any reproduction has taken place. Certainly no such judgment could exist, since judgment proper appears long after redintegration has been used, and is a consequence of that use—but for argument's sake let us suppose such a judgment which comes straight from presentation.

Even such a supposed judgment would still exhibit both analysis and synthesis. It would in the first place analyze for this reason: the whole sensuous *datum*, the totality which appears, never can be ideally mastered by thought so as to be intellectually referred to reality. For apart from a native tendency of the mind in an opposite direction, we have a sufficient cause in impotence. Do what we will, we can not take up every single detail of the sensuous mass. We must neglect something; but the dropping of part is the forced selection of the part which remains. Hence we have used compulsory and unwilling abstraction, and that means analysis.

But this judgment is on the other side synthetical. The content which it has selected is complex; it involves elements in relation, which the joint selection binds together in our minds; and this is synthesis. Nor will it avail to object that some predicates of the reality seem to be simple, and that here at all events we have no synthesis within the ideal content. For in all such cases an element of content would be found in the reality which stands as the subject. The real subject will appear in union with a certain general or special appearance, and this appearance is implicitly a part of that which we mean to say of the ultimate reality (cf. p. 109). This is still true where we predicate of the whole given fact (p. 56); for we connect some character of that whole with our adjective, and take both as qualities of the real subject; and thus in effect, though not ostensibly, both fall within the predicate. We can not have the given either as simple being or as a sensuous felt mass without character or feature;* and

* In metaphysics it is necessary to keep this in view. When, for example, we argue that without a Permanent no change could be experienced, we should remember that on the other side it may be urged that, unless this Permanent were itself phenomenal, it could not be effective, and that the fact of there being something stable in phenomena seems deducible from no principle.

hence, in referring to the real, we attend to and we mean the real as qualified in a certain way. This quality can not be said to become an idea, yet it is unconsciously united with the ideal content. We may therefore say that, if we go back far enough, all judgment does informally predicate a connection which is synthetical, and which is the analysis of that real of which it is predicated.

§ 13. It would be no answer to reply that in many judgments we seem quite passive. For in all these judgments we can show a selection and again a conjunction, and we may argue that hence there can be no judgment in which we are not active. True, I admit, that we do not actively go about to join and select. True again in some cases that *we* never selected, nor should have dreamt of joining, and that the act is little but the formal acceptance of a conjunction forced upon us from without. I fully admit this, but it seems in no way to shake my assertion.

Assume, as we must, that our intellect is not answerable wholly for the matter which it perceives in our sensible judgments. Assume that it has no intelligible ground for many of the events which it is forced to register. Recognize the fact that mere chance strength of stimulus, blind emphasis of sense, is the reason why our perception was thus and was not otherwise. Acknowledge, in the end, that whatever intellectual assimilation by affinity you may fairly suppose to have worked unconsciously—yet at last the effective condition of the judgment is found in mere sensuous depression and relief; that it was by this that a part of the presentation was sunk, and the rest left standing in a prominent conjunction. But, I repeat, all this is nothing to the purpose; we here have got the *sine qua non*, but we have got nothing else.

The intellect in judgment may be guided and led by irrational suggestions, and yet that judgment after all may be an intellectual act. For the sensuous emphasis which prompts and directs disappears in the result, and, however the mind has come to its judgment, after all it has judged. The selection and relation, which appears in the product, *is* not the mere blurring and accentuation of sense. It may have been influenced by it, and arisen from it, but its essence is now

diverse. Bare difference is one thing and distinction is another; solicitation and tempting prominence are still not recognition; and we may be forced to notice, but after all *we* notice. Judgment is our act; and the separation and integration, which appear in its content, are the work of our own analysis and synthesis, compelled, if you will, but none the less active.

§ 14. From mere strength and weakness of feeling on one side, you can not cross to the other side by degrees, and reach without a break a relation of content referred to reality. The distinction and separation, which appear first in judgment, imply, as we have seen, both analysis and synthesis. The perceived exclusion of one element by another involves their relation, and hence their unity in an embracing whole. And the existence of this central unity is obvious in every conjunction. Let that be ever so external, it still presupposes a point of identity; and it is synthesis within a whole which is so differentiated and therefore analyzed.

We may thus state our result. All judgment necessarily contains a relation; but every relation, beside its pair of related elements, presupposes an unity in which they subsist. Hence the judgment, in so far as it is the synthesis of the elements, is just so far the analysis of that whole to which they belong. And, since the experience into which our sensuous suggestions have to be translated, bears this character —a character not in the same way possessed by those suggestions themselves—we may say that all judgment, however near to sense, is essentially an act of analysis and synthesis.

§ 15. Our first question has thus been answered affirmatively. Let us now come to the second. If judgment is an act of analysis and synthesis, is it true that therefore judgment is an inference?

The answer which before (Chap. III. §§ 12–18) we gave in the negative, seems now threatened with reversal. Inference so far has been found reducible to a double process of synthesis and analysis; and it seems that such a process exists also in judgment. Must we not then say that, as reasoning implies judgment, so judgment implies reasoning? We can not say this, and a distinction remains which it is impossible to break down. Inference is an experiment performed on a *datum*,

which *datum* appropriates the result of the experiment. But in those judgments of perception, which we have been just discussing, there is properly no *datum*. I do not mean that, like the Deity of our childhood, they create their world from nothing at all, and exert their activity on a void externality or their own inner emptiness. What I mean is, that the basis, from which they start, and on which they act, is *for the intellect* nothing. It is a sensuous whole which is merely felt and which is not idealized. It is not anything which, as it is, could come before an understanding; and hence we can not take it as the starting-point of inference, unless we are ready to use that term in a somewhat loose sense.

We needs must begin our voyage of reasoning by working on something which is felt and not thought. The alteration of this original material, which makes it first an object for the intellect, is thus not yet inference, because the start has not been made from an ideal content. Before reasoning exists, there must come an operation which serves to transform this crude material; and this operation is both analytical and synthetical. But it is not inference; for, though its result is intellectual, its premise, so to speak, is merely sensuous.

Thus our primitive judgment falls short of inference in two main points. It is doubtful first (i) if the operation performed is not purely capricious. Psychologically, of course, it does not come by accident; but regarded logically it looks like chance. We have no rational ground we can produce, in order to justify our result. This is the first point; and secondly (ii) the stuff, upon which the act is directed, is not intellectual.

§ 16. Thus judgment is not inference. But though the answer we have given is so far satisfactory, it ignores a question which must now be raised. Both judgment and inference are terms that can be used in more senses than one. They may stand for these acts at the highest stage of their most conscious developement, or may point to the undeveloped and early rudiment of their unconscious beginning. And the question is whether this doubtful meaning has not seduced us into a common fallacy.

The evolution of the mind and of its various powers through different stages, and the survival and co-existence of

nearly all these stages, lead us everywhere into difficulty, and threaten us with illusion. And the danger lies in the risk of turning through a vicious circle. For two so-called faculties stand to each other in such a way that each one, if you take it at a higher stage, presupposes the other in a less advanced form of developement. Each therefore in some sense does start from the other; and, if you forget that sense, you are tempted to make the dependence absolute. While both are co-equal, you may falsely place one in front of the other. This is as common a mistake as can be found in psychology, and we may seem to have given it a fresh illustration.

For we argued that judgment could not be inference, since inference starts from an intellectual base, while early judgment must begin with sense. And the doubt is whether a similar proof would not show that inference must precede judgment. Suppose both coeval, and progressing through stages, then rudimentary inference will come before explicit judgment, just as primitive judgment was required as a base for explicit inference. And in this case we surely should have fallen into error, for reasoning of some kind would be implied in the very beginnings of judgment.

§ 17. We did not make this mistake. When we said that some judgment was free from inference, we knew the sense in which our terms were used. What we spoke of was *explicit* judgment and inference, acts both of which end in an asserted truth, and one of which starts with a truth laid down as the foundation of its process. And *in this sense* it is true that we judge before we reason, since we become possessed of an affirmation, when we can not produce any other affirmation upon which this stands. Thus the distinction which we made remains unshaken. Explicit judgment comes before explicit inference. And supposing that both are really and in the end two sides of one act, then the above conclusion is what we might have expected. Here as everywhere the product comes to consciousness first, and the process afterwards.

§ 18. Explicit judgment is assuredly distinct from explicit inference; but if we like to go back to the origin of each, and ask if the rudiment and beginning of one comes before or after the rudiment of the other—then, I think, we must give a

different answer. The earliest judgment will imply an operation, which, though it is not inference, is something like it; and the earliest reasoning will begin with a *datum*, which though kin to judgment, is not intellectual. And from the first these two functions imply one another. You can not say that in developement either comes first; they emerge together as two sides and elements, implicit within one primitive whole.

If we begin our enquiry from the physiological side, we find there a process which consists of two parts, an action and a reaction. We may agree to say that experience starts with a stimulation coming in from the periphery; but then this is but one side, for the stimulation must be met by a central response. I do not mean that experience first begins with a motor discharge ensuing upon an incoming shock. That may be true, but something else and more general is to be considered here. Unless the nerve-centre answered to the afferent impulse by some kind of reaction, whatever it may be, could we say that there existed a physiological sensation? It seems clear we should be wrong if we ventured on this.

And, if we consider the same thing from its psychical aspect, we shall reach the same result. No doubt our inherited superstitions have used us to the idea of sensations, which simply walk into a mind which is nothing but empty space. But is this idea true? Is it not being slowly but surely exploded by the doctrine which sees in every sensation the product of an active mental reaction? We may say then that our senses give us sensations; but their gift contains traces of something like thought.

§ 19. I am aware of the difficulties which beset this subject, and it is impossible here to enter into them. I may perhaps briefly state the question thus. At a certain stage we should all admit that our presentations show marks of intellectual activity. Well, as you follow backward these presentations to the earliest rudiment which you can say is given, at what point will you draw your dividing line? Where will you say, We have here the crude material, which would be exactly what it is now, though there were nothing like comparison, reproduction, or abstraction? And non-success in finding the proper place for this line, may lead to the belief that no place

is proper, and that no known material is wholly crude. First experience is not intellectual, in the sense that we get elements conjoined and parted by relations which explicitly appear. It does not give us an ideal content marked off from the mass of confused reality, and internally defined as qualities in relation. On the contrary it comes as a vague totality which has nothing outside it, and which internally is felt as an indiscriminate effect, in which the constituents are lost to view. But it is intellectual in the sense that, when we come to reflect on its *datum*, we find marks of activities, which, *if they had been conscious*, and if they had not stopped at feeling, we must have called intellect. And I regret to say that I must leave the matter so.

§ 20. But, assuming that the first thing, which we feel or know, results from a reaction upon a stimulus, we must deny two things. We must refuse to allow that experience comes from an operation on a *datum*, or yet is a *datum* without an operation and so independent. Both assertions would suppose that something is given, where nothing is yet given. The beginning of experience is the resultant of two factors, a stimulus and a response. And here we see how the rudiments of judgment and reasoning are intertangled. The mere stimulus is not given, and so reasoning has nothing from which it could start. But, on the other hand, a mental activity can not be directed upon simple zero. We have two factors, the reaction and the stimulus, and in a certain and improper sense these two factors may be taken as the premises of a judgment. And the result again may be taken as a conclusion, not indeed from *data*, but from an indefinite ground to a definite *datum*.

§ 21. Nor can we fairly object that this conclusion is capricious, that the activity is either an arbitrary handling which *makes* its result, or a formal registration which merely accepts it. Irrational indeed the conclusion must be, in the sense that the mind can give no reason for the sensation it is forced to. But capricious or formal it certainly is not. It follows from its premises with the strictest necessity, and combines in its result the character of both. And again it is no mere formal acceptance. For the organism, and with it

the empirical subject, has its peculiar nature which is impressed on the product. We might say that our premises are the centre and the incoming change, that the middle operation is the synthesis of both, and that our result is the conclusion. And in such a loose and incorrect sense of the term this operation is inference.

Or let us take the same thing at a higher remove. Let us pass beyond those factors which first produce feeling, and let us say that the feeling has been produced and qualifies the subject. But one feeling is, as we are told, no feeling; and the subject, merely determined as α, is so far nothing. Then while α remains, let β supervene, and the result may now be a sensation A, which is neither β nor α, but is the consequence of their union. This result is clearly no inference proper, yet it possesses much in common with reasoning. We may be said to have premises α and β, then comes their synthesis, and a sensation A is the new result. Nor is it easy to object that at all events *for consciousness* a result must come first, and then afterwards be used. For if one feeling is no feeling, perhaps consciousness first wakens with a complex presentation, and gets by a circular process the result together with its premise. The first feeling, which is the reason why we experience the second, itself becomes explicit in the product, and is thus both starting-point and goal.

§ 22. It is clearly unsafe, when we go back beyond explicit judgment, to give priority to either function. It is better to treat their rudimentary forms as two parts of one whole; and it is this point of view from which it would be right to consider the nature of our early experience. We should in this case be led to ask some interesting and important questions. If in knowledge the subject and the object are premises, is not every assertion, which confines itself to the object, an illogical conclusion? No physiologist would believe that colours or sounds were the properties of those stimuli which act on the centres of vision or hearing. But, if so, by what process are we to remove the influence of the subject in knowledge?

And there is another question, the importance of which could not well be exaggerated. If in knowledge the subject

and the object may be called premises, then what are we to say of the middle operation? We have seen that this demands a central identity, and where is the central identity here? But, without it, what becomes of the relation of the premises and of the ensuing result? This question would lead to problems in metaphysics which we can not even glance at in passing.

§ 23. If we tried to pursue this line of enquiry, we should soon be carried beyond the scope of our volume. But, if we return to the immediate object of our scrutiny, the relation existing between judgment and inference, we may show how the circle, which we lately noticed, comes up in the process of reproduction. Every judgment on the one hand seems to imply redintegration, which itself on the other hand seems to presuppose judgment. The explanation is that reproduction implies a rudiment of judgment, but that this does not become explicit and show itself *as* judgment, until it has been used as a basis of inference. The unconscious synthetical activity brings its own principle or premise before our eyes, and in a sense makes that actual. And we have here no miracle. We are given *ebf*, which, by redintegration from *abcd*, turns to *ebfd*; and from *ebdf* an abstraction may supply us with the judgment $b-d$. But this $b-d$, which is thus the conclusion, was also the basis of our reproduction.

It will be objected no doubt that in *abcd* there perhaps may be no rudiment of judgment; that there may exist in this foundation no intellectual act, no unconscious selection, or notice, or preferential attention to $b-d$; and that in short there may be nothing but sensuous strength and prominence of *b* and *d*. But in the end, as we have seen, this will make no difference. For it is admitted that, out of the past *abcd*, $b-d$ is employed to qualify *ebf*. But, if so, we ask, In what shape is this $b-d$ made use of? Can it, if you take it as it comes to sense, be so employed at all? This would be quite impossible. Beside its entanglement with the whole *abcd*, it has in itself a particular character, a special colouring, which does not suit *ebf*, and which does not appear in the conclusion *ebfd*. And thus the purification of $b-d$ is an intellectual act, performed as part of the reproduction. It

shows clearly that function of selective analysis which belongs to judgment and to inference alike.

§ 24. It is interesting to see how, when we qualify a perception through reproduction, our act is one common process of analysis and synthesis. Let *abcd* be given, and then *ebf*, and let *b* redintegrate its complement *d*, with a final result *b*—*d*. The movement is synthetical, and yet it has analyzed, since it has divided two wholes. In the first place, since *b*—*d* has never been given us, its use and explicit realization breaks up *abcd*, and is thus abstraction. In the second place, now that we are aware of *b*—*d* and have *ebf* presented, the different contexts of *b* are a means for splitting up *ebf*. The analysis of both these compounds emerges in the act of construction.

I will work out more in detail one part of the process we have just observed. Let *abc* be presented, and then let *b* be fixed upon and considered by itself. This of course is analysis, and what I want to show is that construction can effect it. For suppose that, on the strength of former experience, *b* is now an element in other connections. Then here in *abc* the *b* may redintegrate other elements, and may try to appear as *b*—*p* or *b*—*q* or *b*—*r*, all disparate with one another and with *abc*. A collision must follow between *p*, *q*, *r* and *ac*, with the result that *p*, *q* and *r* are rejected. But this rejection may have led to a distinction. The identity of *b* amid these struggling differences may have caused the attention to be centred upon it. In the process, so to speak, it may thus have become free, and hence the synthesis will have been a condition of analysis.

We are invited to pursue this subject further, but we have done enough if we have shown the interconnection of both our functions. We must return from our digression (if it really be such), and must take up the thread we broke off before in § 11.

§ 25. Beside the functions of analysis and synthesis we found that reasoning employed a third principle. The leap of transition from the possible to the real did not seem to fall under either of these heads. We must try to see this third

principle more clearly; and, if the reader will permit, will approach it indirectly. We will try to show how the defects of analysis and synthesis lead the mind beyond the limit of these functions.

We have seen that they both are two sides of one process. And it follows from this that the increase of one must add to the other. The more deeply you analyze a given whole, the wider and larger you make its unity; and the more elements you join in a synthetic construction, so much greater is the detail and more full the differentiation of that totality. We have here the antipodes of that false relation of extension to intent which we criticized before (Book I. Chap. VI.). That preposterous article of orthodox logic turned the course of our reason into senseless miracle. The less a thing became the further it went, and the more it contained the narrower it became. Such a total reversement of our rational instinct could spring from nothing but a fundamental error. And it arose from our use of the abstract universal. That can not be real, and in consequence our thoughts were all built on unreality and ended in falsehood. But in the concrete universal, which has guided our steps, and which has appeared as the identity of analysis and synthesis, we have returned to truth and made our peace with reality.

§ 26. If for metaphysics what is individual is real and what is real individual, for logic too the rational is individual and individuality is truth. And this is no paradox. Our practical criterion in every enquiry is the gaining all the facts and the getting them consistent. But this simple test unconsciously affirms that the individual is true and the truth individual. For a fragment of the whole broken off abruptly, or a whole that internally was at issue with itself, would alike fall short of individuality. Unawares then we strive to realize a completion, single and self-contained, where difference and identity are two aspects of one process in a self-same substance, and where construction is self-diremption and analysis self-synthesis. This idea of system is the goal of our thoughts, and to sight of this perfection we have been conducted.

§ 27. But we have not reached nor entered. Our analysis and synthesis have fatal defects, and their unity is poor and

but superficial. Our analysis has to begin with a *datum*, and to divide its singleness into single components. But in the first place this origin is *not* single. For the *datum*, with which it begins, is limited, and is therefore defined by external relations. These alien connections go to make it what it is, and it hence involves them within its own being. But, if so, its unity comes to an end. In its attempt at self-developement it depends on the external; and therefore, even if its analysis is successful, it has not analyzed *itself*. And in the second place the result of its analysis remains defective. It fails not only to analyze *itself*, but it also fails to carry out the analysis. For the components it produces are themselves unstable. Characterized as they are by their external relations and so impregnated with a foreign principle, their own unity falls apart internally into relations of *other* included units; and hence we never reach anything which we could rightly call single. Want of individuality in the *datum* that we began with, absence of self-movement and impossibility of self-developement, this is the first defect. Want of individuality in the result attained, and endless dissipation into foreign relations, this is the second defect of our analysis. It is ruined throughout by externality. The elements are inwardly alien to themselves, and from without they each are alien to the other and to their common origin. The analysis in the end is hence *not* synthesis, if that means self-relation.

§ 28. And our synthesis is no less defective. We start with one element and go on to another, and find them both as constituents in a whole. But we can not say that we advance from our *datum* by the analysis of that. The opposite is the case, for our fresh constituent is dragged up and chained on from the outside. To the original element this stranger does not seem a part of itself, but a foreign arrival and importation. The synthesis is thus not self-determination. And this same fault has another side. For the whole, which you have reached, is no system of differences; it is not an individual. The differences are an aggregate, found conjoined together, and no self-analysis of a single unity. The elements certainly are united by a central point, and are thus inter-related; but their relations remain external and forced. Instead

of moving freely from one to the rest, you are compelled to pass through a machinery of steps, which seem to have no vital connection with the elements you bring together. Thus the union is in the end no inward bond, but a foreign coupling; and you can not pass from the centre to the system of differences. It is no living point that withdraws into itself the life of its members, and flows forth into a body which it feels as its own. It is the axle of a wheel where spokes are driven in, and where the number of holes and spokes is indifferent.

This first fault of our synthesis implies a second and counterpart. For the whole, which we make, is never completed. It is determined from outside; and its unity is compelled to assimilate in relations to foreign bodies the seed of dissolution. These bodies fall outside that whole whose analysis we from time to time have procured by our synthesis. The synthesis turns out therefore *not* to be the analysis of the whole which we assigned to it, since that whole does not include the foreign matter, which intrudes in the result. And the perpetual effort to go on and to find the completion of our synthesis, and to realize the unity which we demand in our construction, proves a self-delusion. It leads to that chase of the spurious infinite, where fruition, ever instant, is baulked perpetually. Our synthesis is therefore no self-analysis.

§ 29. We have seen the defects in both sides of our operation, and we naturally ask, Is there any remedy? Or, since the sin lies so deep that to remedy the process would be to change its nature, we may ask, What is it that we really do want? What was it that guided our half-conscious thoughts, and forced us to see failure where we desired success? To perceive imperfection is to judge by the perfect, and we wish to become aware of this idea which has served us as a canon and touchstone of reason. If we realized our ideal, what then should we get?

We should get a way of thinking in which the whole of reality was a system of its differences immanent in each difference. In this whole the analysis of any one element would, by nothing but the self-developement of that element,

produce the totality. The internal unfolding of any one portion would be the blossoming of that other side of its being, without which itself is not consummate. The inward growth of the member would be its natural synthesis with the complement of its essence. And synthesis again would be the movement of the whole within its own body. It would not force its parts into violent conjunctions, but, itself in each, by the loss of self-constraint would embrace its own fulfilment. And the fresh product so gained would renew this process, where self-fission turns to coition with an opposite and the merging of both in a higher organism. Nor would the process cease till, the whole being embraced, it had nought left against it but its conscious system. Then, the elements knowing themselves in the whole and so self-conscious in one another, and the whole so finding in its recognized self-developement the unmixed enjoyment of its completed nature, nothing alien or foreign would trouble the harmony. It would all have vanished in that perfected activity which is the rest of the absolute.

§ 30. This crown of our wishes may never be grasped. We may find that in practice it is not attainable, and is impossible for us to realize in detail. I will not say this is not so. Nay I will not deny that this ideal may itself be a thing beyond the compass of intellect, an attempt to think something to which thought is not equal, and which logic in part refuses to justify. I will not pass this sentence, nor will I gainsay it. But one thing I will say. The idea may be a dream, or even a mistake, but it is not a mere delusion. For it does not wholly deceive us. It does set before us that which, if it were actual, would satisfy us as thinking beings. It does represent that which, because it is absent, serves to show imperfection in all other achievements, takes away our rest in all lesser productions, and stirs our reason to a longing disquiet. There has come in to us here, shut up within these poor logical confines, and pondering on the union of two abstract functions, a vision of absolute consummation. In this identity of analysis and synthesis we recognize an appearance of our soul's ideal, which in other shapes and in other spheres has perplexed and gladdened us; but which,

however it appear, in Metaphysics or Ethics or Religion or Æsthetic, is at bottom the notion of a perfected individuality.

§ 31. We may seem to have wandered away from our subject, but in reality, I think, we have come straight upon it. We desired to understand that remaining function, which fell outside our analysis and synthesis, and we began by seeing how far these principles stopped short of and fell outside completion. Their defect was, in a word, the lack of self-developement. Is it an idle fancy, if we see in the element which we desired to understand, and which passed without help from idea to fact, a trace of self-developing perfection? Or is it actually true that in our every-day arguments we must use an incomplete form of this principle?

We must, I think, in the first place admit this, that the act of thought by which we assume that, given one possibility, that one is real, can not be reduced to analysis or synthesis. And this act exists as a normal function. It is a law that, when we have a subject A, and with this a possible predicate *b*, and when (either because other predicates are absent, or because they have been suggested and excluded) this predicate *b* is left alone—that then the subject appropriates this predicate, and openly attributes it to itself as a possession. We may not recognize this law, we might even like to repudiate its claim, but we can not help obeying it. Where a suggestion has been made, if that suggestion is not rejected by the fact which we start with, or again by some other suggested quality, if in short we are left, not with disparate possibles, but with one uncombated may-be—that suggestion must always be taken as fact. This is a process of thought, and it does not seem to fall under any previous process, but on the contrary to lie at the root of all our reasoning. On its negative side you may give it the form of "I must because I can not otherwise," and you may reduce every function of inference to this form. But on its positive side, and that is the truest, you may state it as "I must *so* because I will *somehow*." The striving for perfection, the desire of the mind for an infinite totality, is indeed the impulse which moves our intellect to appropriate everything from which it is not forced off.

§ 32. And, if I may guess, it was this principle which, falling from the sky, appeared disguised as Primitive Credulity (Book II. II. Chap. I. § 23). Among the many services, which Professor Bain has done to our philosophy, we have to thank him for this, that he is incapable of suppressing what looks like a fact. Here in the middle of the rest of his theory, without any reasoned connection with his principles, he points out this seeming irrational readiness to take ideas as facts, so long at least as this process is possible. And with this, if indeed it is not the same impulse, goes "the tendency of an idea to become the reality" (*Senses*, p. 341). These primitive weaknesses, according to our author, should be counteracted by experience and reason, and are a thing which perhaps we may say should not be, and ought not to exist. From this conclusion I dissent,* but I gratefully acknowledge the frank acceptance of the mental tendency. For I seem to find in these early superstitions a normal activity of the developed soul, the increase of which does but add to its progress. This double effort of the mind to enlarge by all means its domain, to widen in every way both the world of knowledge and the realm of practice, shows us merely two sides of that single impulse to self-realization, which most of us are agreed to find so mystical. But, mystical or intelligible, we must bow to its sway, for escape is impossible.

§ 33. We shall hereafter discuss the validity of this with other forms of reasoning, and we may here recapitulate our present results. Inference is an experiment, an ideal experiment which gains fresh truth. It employs divers modes of synthesis and analysis; and, underlying all and in one case apparent, is that aim of the intellect after perfect fulness which leads it to appropriate all suggested ideas which are not torn away. And reasoning depends on the identity of indiscernibles; for the middle operation must turn on a central point of sameness, and again the *datum*, with which we begin,

* I must dissent again from the formula of Credulity, as given by Professor Bain, and which I have italicized. "We begin by believing everything; *whatever is, is true.*" This at all events we can not believe, unless we are idealists of an extreme type. I must suppose that Professor Bain *means* "Whatever appears, is *real*," or "Whatever seems, is *true.*"

must survive through the process. It must go into the experiment, and must appropriate the result which that experiment obtains. We have seen all this, and there is something else which now becomes visible. The identity, which we find in the middle operation, and the self-preservation of the basis we start with, have been set side by side. But in a sense they really are one and the same; and it will repay us to see this. It shows that at bottom, and in a struggling way, reasoning is really a self-developement. Throughout the process one subject is developed, and again to some extent it developes itself.

§ 34. I will begin with the first of these assertions, but will not weary the reader with a repetition of detail. For the presumption is now so strong in favour of its truth, that we may content ourselves with the removal of obstacles. All depends on our looking in a proper way at the premises we begin with. If for instance we have certain spaces and combine them, or two subjects and compare them, then in the middle operation, it may be said, the unity is imported from the outside. And so it is, if you take the spaces or the subjects as they wrongly appear in complete independence. But in that case you would never by any machinery force them together. The true starting-point is the total space as qualified by these points in relation, the common reality which appears in both subjects, the one ideal integer in which any given numbers exist as fractions, the underlying whole which presents itself as complex, and by abstraction is shown with a simpler predicate. This *implicit* subject is what supports the change brought in by our process. And it also serves as a centre of activity in the process itself.

With spaces and numbers this second truth is clear. But in other cases, such as comparison, we may still verify the same rule. We begin with A and B, and we compare them to find the relation between them. But the centre of this synthesis must be a felt basis of quality common to both, and this common basis was implicit in our starting-point. You may indeed determine to compare two terms before you know the special point in which they are comparable; but you can not perform the actual comparison, until the terms have been unconsciously

apprehended under one aspect. Thus reality appears, not simply as two terms, but as possessing an attribute or group of attributes, which is given with two separate sets of qualities. And in the result this basis through its own activity becomes explicit. We may say here as everywhere, that the real subject, implicit at the start, and active in the middle, shows itself at the end by a developement of some latent relation or quality which it claims as an attribute.

§ 35. And thus, in a certain sense, the movement of the subject has been self-developement. We have seen by how much it falls short of true freedom. We have seen how the capricious changes which we effect, and the external constructions which we introduce, stamp the character of our reasoning with an arbitrary print, and raise painful suspicions of its invalidity. But there yet remains something, which we must examine later. It is assumed that, whatever in our reasoning may be arbitrary, yet at least the conclusion follows from the premises naturally and necessarily, without altering or straining or even addition. If *we* can be shown of our own free choice to have forged one link in the chain of inference, then the connexion snaps and the ends fall apart. The assumption will trouble us enough in the discussion which ends this work. But, if there is any truth in it, it points to our belief that the conclusion must naturally grow from the premises, and can not in any way be dragged or forced out of them. Our apparatus of proof has been compared to a scaffolding, which is removed when the edifice of reason has been built ; yet, if *we* have but placed the parts in conjunction, there is nothing which will hold when the scaffolding is gone. If our process is not to end in a ruin, the apparatus we have used must be simply a prop, supported on which the argument has grown up, till strong enough at last to support its own fruit and to stand by itself. Or if this, as I fear, is too high a comparison, we may say that our constructions must be plasters or threads or splints or bandages, which hold together for a while our broken perceptions, till we see them unite and come together. Every inference we could make would prove unstable, unless, at least to this poor extent, it were self-developement.

CHAPTER VII.

THE BEGINNINGS OF INFERENCE.

§ 1. We have seen in what explicit inference consists. It is a conscious operation, aware that the activity which it exerts is ideal, and ending in a judgment. This judgment again is accompanied by the reflection, that what went in at one end of the process, has come out at the other end. This is *explicit* inference, separated, we shall agree, by an enormous interval from the beginning of soul-life.

It is not the purpose of our volume to trace the growth which in the end has bridged this gulf. But we can not fully understand the highest form, unless we have at least given a glance at the lowest. And we have been compelled already in our account of judgment, to say something on the nature of the primitive mind (Book I. Chap. I. § 18), and to return to that theme, when we tried to correct the vagaries of those whom Association has victimized (Book II. II. Chap. I.). Once again, and in the present Book, the entanglement of inference with judgment brought us face to face with the beginnings of reason. And, as we are nearing the end of our labours, it may be well to sum up, and even to repeat, what we have to say on the earliest intelligence.

§ 2. That intelligence is scarcely to be recognized; for it lacks, as we saw, the chief marks of intellect. It can not judge, for it has no ideas. It can not distinguish its images from fact, and so can not unite them consciously to the world of reality. And thus it can not reason; for its inference, if it had one, would end in a fact, and not in a truth. It would not be aware of an ideal activity, but would blindly accept the transformation of an object. And even to this point it has not progressed. As perceived by the dawning reason, the object itself is unable to change; since if the change is to be known,

the original must be retained, and its sameness held fast. But such a process is too hard for nascent intelligence. And so we must not say that it observes the fluctuation of the object, for it does not as yet possess any object.

I do not mean that in this blurred and confused totality there exist no differences, and no dim feelings of self as against a not-self; for these characters, I believe, are there from the first and also are felt. And, if it were not so, I do not see how we could ever have advanced to the place where we stand. But these differences, though felt, are not for consciousness. They are aspects of one feeling, they are not two feelings, in the sense of two elements which present themselves apart. They do not appear as two realities, for we are still a long way from perceiving realities. Hence there is change in feeling, not alteration in things. And, having no things, to repeat it once more, we have got no ideas. And so we have got no ideal processes. Comparison and distinction, that bring with them a consciousness of agreement and difference, are activities we have not yet learnt to recognize. We can not even say of two elements that they are like although they still are two. There is no memory or expectation, since the past and the future are nought but felt colour and quality of the present. And there is no world of imagination nor play of fancy, since these presuppose a knowledge that ideas can exist and be unreal; while in the primitive mind no suggestion is retained which does not integrate itself with felt reality. Dream and waking again bring no known diversity; for dreams are not recalled, and at a ruder stage the very difference seems to be absent. We are ever awake, or live out our lives in a prenatal dream.

We may say that at first the whole ideal side of our minds is hidden from consciousness. So far as we know it, it is the mere dumb feeling of elation and collapse, which marks the continuous flow of sensation.

§ 3. So blind and unintelligent is the childhood of our intellect, and we might think that no germ of intellect was there. We might fancy that we saw the mere passive recipient of external impressions, the sport of sense and of mechanical suggestion. We might flatter ourselves that at last we were

quit of activities and functions, and had bored too low for a fictitious reason any longer to trouble us. In this floating tide of presentation, where nothing is false and nothing is true, and where self-consciousness seems only the felt practical relation with its manifestation of pleasure and pain—we might think that at last we had come upon a soul, which was free from even the rudiment of those powers that have been ascribed to the developed intelligence.

But, if we cherished this thought, we should fall into error. For in the very lowest stage of psychical existence we still can point to a central activity, and verify there a rudiment of inference. And a soul, so far as we are able to see, would be no soul at all if it had not this centre. It would be an abstraction which can flourish in the heads, and can take its rest on the shelves of theorists, but which never was actual and never could have been actual.

§ 4. Physiology gives no countenance to this false idea. It would be presumptuous for a layman to rush in, where special education gives the right to speak; but I will confine myself to a guarded statement. Physiology does not reject the belief that the beginning of feeling implies the presence of two bodily factors, a stimulus coming inward from the periphery, and then a reaction on this from within.* But, if so, we may be right if we say that the very first glimpse of sensation is a result of two activities, is a conclusion, so to speak, from two material premises, of which the central response makes one. And, if we considered the same question by the light of introspection, we might find reason to think that the lowest feeling, which we are able to observe, does exhibit two aspects, one of which may be conveniently called *self*-feeling. I will not venture to assert here what certainly demands a lengthy discussion, and I admit that this double aspect in sensation is a very obscure and difficult point. But I thought that in passing I might call attention to the fact, that the mere passivity of our first sensations can be controverted alike from the ground of psychology and the ground of physiology.

* I have purposely used the vaguest language, as I do not feel at liberty to assume that psychical life does not precede the developement of nerves.

§ 5. It is better to move towards plainer issues. Let us suppose, if you will, for the sake of argument, that the first sensation is a passive impression. But no sober writer will contend that this by itself is experience. The origin of experience, we shall probably be agreed, is to be found in what is called reflex action. But unfortunately here we are still in the region of doubt and controversy. When we desire to know how the physical reflex gets a psychical expression, our progress is barred. It seems not known, for instance, if the efferent side of the circuit is *ever* represented in consciousness, or, if it is represented, how it comes to be so. The so-called "muscular sense" appears to be as doubtful an article in physiology as it is in psychology, and in these pages we are compelled to avoid it wholly. And our only course is, I think, to content ourselves with an unfavourable view. Let us say that experience begins with a reflex which comes to consciousness, and that, on the *psychical* side, this reflective circle starts with a simple passive sensation. Then follows a discharge which moves our limbs, and brings forth a change in the immediate environment. This alteration is represented by another sensation (however produced), which for consciousness simply ensues on the first. From this modest beginning we have to see how the activity of the centre begins to develope the rudiment of inference.

§ 6. Let a feeling A somehow cause a reflex action β, with an altered feeling C. This feeling C comes indirectly from the reflex, since it arises from the change, in my body and in the object, which that reflex produces. Suppose now that a modified A recurs, then by mere reproduction it is followed again by the action β; but let us suppose in addition that β fails in its former relation to the environment. Then C will not ensue. The sensation from the object, and the enjoyment of possessing it, will in this case be absent. But something else will be present. For part of C consisted in certain feelings, arising from changes in the muscles, the skin, and the organs of secretion. These changes are produced once more by the reflex; and therefore, although the object is not there, their feelings will come up. And this is important: for, part of C coming up, a redintegration will supply us with other parts.

Hence, though the object is not present, though the full sensation and pleasure of possession remains untasted, we yet are visited by fainter suggestions out of harmony with presentation, and that do not satisfy. This gives us a collision, a contrast between the new presentation and the feelings excited by the inappropriate reflex action. And in this contrast there lies an undeveloped inference.

We have not yet got anticipation baffled and disappointed hope; for the mind has not yet reached the stage of expectation. It does not know that its suggestions are mere ideas. But, for all that, we have already both sides of a process which must lead in the end to this great distinction. We have first a modification of sensation by ideal suggestion. We have next a failure in correspondence and a collision of these elements. And the pain of accident or unsatisfied desire will force the soul to consider this contrast, and to make explicit the difference which it must feel. Both in theory and in history, it is mishap and defect on the practical side which gives birth to speculation.

§ 7. For the early soul-life (it is a truth we can not repeat too often) is immersed in practice. It is wholly directed to the satisfaction of its appetite, first for food and then for the continuance of its species. The selective attention, with which it meets the series of sensations, is guided by these heads, and is governed throughout by the dominant ideas of feasting, war, love, and social attachment. For the sake of these ideas it neglects the main part of the offered suggestions. And the intellect is so unfree, that the very first start that is given to redintegration may consist, as we saw, in a reflex action which seems merely physiological. This rule of the "passions," and bondage of the "reason," comes down very late in the scale of evolution, and it is hard to say where intellectual freedom begins first to show itself. The curiosity shown by the lower animals, and their apparent love for beautiful objects, are phenomena which I could not venture to interpret. It seems probable that pure theoretical curiosity appeared before man had been developed; though it no doubt may be argued that the impulse still remained at bottom practical. But, whatever we may think on this interesting point, what is

certain is this, that at the beginning of progress the intellect is subordinate, and that afterwards it becomes at least partially free. And the conclusion I would add is, that the intellect would never have appeared on the scene, if it had not been present and active from the first. We may start with a reflex that follows unfelt upon a sensation; and the feeling that ensues may so far be taken as a passive result. But, together with this feeling, are recalled by a synthesis other elements which co-existed with it. And this recall has no immediate practical link. On its psychical side it is assuredly a rudiment of intellect and reasoning.

From the first it is a function of undeveloped inference which enlarges the given by ideal suggestions. The selection of these suggestions begins with being practical. There is, so to speak, no attention but appetite. But gradually the interest becomes more remote. It is held to appetite by a longer chain of links. And it possesses at last, not a mere activity, but an end of its own. When this is accomplished the reason is emancipated; and the history of the intellect would recount the setting free of that ideal function which was present from the first.

§ 8. Such a history would be hindered by many difficulties, and obstacles would arise upon every side. It would find insecure metaphysics, one-sided psychology, a physiology in great part unsettled, and a study of the ruder forms of the soul not long attempted. It was not our object to trace even the barest outline of developement, but to call attention to one cardinal point. The beginning of intellect, the first rudiment of reason, is present at the outset of psychical life. In what is called "association" is involved the vital principle of the highest logic. For we must repeat once more what we have insisted on so often. Universals are what operate in the very lowest minds. We may say the line of least resistance is too narrow for facts, and that in passing they are stripped and thinned down to generals; or that this line, like our forefathers' ghostly bridge, is no way for more than bodiless spirits. But, however we phrase it, the result remains that from the first what works is the universal. It is never the whole object, it is that in the object which corresponds to the inherited predisposition, which

excites the reflex. It is never the whole feeling, which by redintegration calls up those sensations which accompanied the past. It is always an element particular to neither, but common to both and unconsciously typical. The anticipated image is itself again an implicit universal; for otherwise how could it ever be identified with a reality not the same as itself? We need not here recall the detailed discussion which we entered on before. If there is any result we may be said to have established, it is this, that from the first similarity is not a principle which works. What operates is identity, and that identity is an universal.

§ 9. In the view which we take of the primitive mind we have to battle with two counterpart mistakes. On the one hand we see in the lowest life functions higher than those which some assign to the highest. The degradation of the soul to an impossible pitch of decentralization is one of the prejudices against which we protest. But, on the other side, we must take our stand against the undue exaltation of early intellect. With the most debased theory of the beginnings of the soul go the wildest beliefs in the high capacities of the lower animals. Now I do not for one moment profess to be able to fix the limit reached by non-human intelligence; but I think some views may safely be rejected. When animals, confessedly far inferior to man, are represented as inferring in a manner in which no man does reason, save when working at his most self-conscious level—then, I think, we may be sure that this idea is erroneous, and that the fact must here have been wrongly interpreted. We may perhaps have no real knowledge, but still we have probability.

§ 10. We may illustrate this tendency to an overhigh estimate by the classical instance of disjunctive reasoning. The dog, who follows his master's traces, comes to a spot where the road divides. He approaches the first of his possibilities in a spirit of doubt; but, when that doubt is ejected by disbelief, his mind is made up. He runs confidently down the remaining alternative; for he has reasoned reflectively. He is certain of this that, if one has proved false, the other *must* be true. But the instance, I think, is largely fictitious. The facts are uncertain and the interpretation vicious.

With respect to the facts, I venture to assert that the *ordinary* dog does not first examine tentatively one road, and then confidently and undoubtingly go down the other. What he visibly does (in a case of ignorance) is to approach both outlets in much the same way ; or if he hurries to the second, he does not, with that hurry, show any sign of confidence or elation. And the true interpretation is, I think, very simple. When he comes to the division he does not say, "See here are two ways and I know one must be wrong, I have therefore two exclusive alternatives." He does not, I think, enter on these introductory reflections, but the road which is nearest suggests the idea of his absent master, and he acts on this suggestion. Then he fails, and, seeing the other road, repeats the same process, except so far as delay has increased his eagerness and hurry. There is nothing to show that he ever has before him more than one idea at a single time. One suggestion follows and drives out another, but different suggestions are not held together. And we should remember that the retention of an idea, which, by being denied, forms the basis for a further positive advance, is a very late acquisition of the mind. It is hard to believe that, where speech is undeveloped, this function can be present.

And, if I am told that from examination of the first road there are dogs who will at once go down the other without any examination, and that therefore they must use explicit disjunctive reasoning—I will not take back one word of the foregoing. Admitting the fact, I should consider the interpretation absurd. The fact to be explained is the appearance of the last road as the path of the master, and it is gratuitous to explain this by the retention of and reflection from the negation of the residue. It is, I presume, agreed that each road tends to suggest the master; but, if so, provided only that the failure of the other roads prevents them from coming before the attention, the whole fact is explained. They cease to be suggestions, because they are now made one with the feeling of failure. They are hence excluded as soon as they are called up, and the remaining suggestion *must* therefore seem fact immediate and simple. I have presumed that, in explaining the acts of the lower animals, we should not postulate *more*

intelligence than is wanted in order to account for the phenomena.

§ 11. It would be interesting, if it were possible, to discuss in greater detail the intellectual phenomena of the primitive soul. But, apart from other reasons, we are forced to confine ourselves here to the general, and may sum up what we have to say in these words: *in the infancy of reason there is no necessity.* The nascent intelligence goes to its result, not because of the premises A and B, but because it can go forward in no other direction. And even that is incorrect. It advances, not because it can not do otherwise, but because it advances. The ideal change takes place before it and is effected by its act; but it has not reflected on the existence of that change, and still less on its ground. Thus it sees, not at all because it must see, but simply because it happens to see. And for this reason disjunctive inference is impossible. There are no possibilities between which to choose, since every suggestion is taken as fact or is straightway excluded. There can properly be no choice where the mind is not conscious of any ideas. Thought follows the line of the least resistance; but it knows nothing of resistance and nothing of other lines, and it does not know that it is even thinking. The primitive mind has troubles of its own, but as yet it has learnt neither its strength nor its weakness.

And there remains an observation I may be allowed to make. It is *possible* that the upward growth of the mind may so have changed or coloured its simplest functions, that we can not any longer find in ourselves the psychical phenomena of the lower animals. This is possible, and with respect to certain special functions it is much more than possible. But, if we take it broadly, I confess that I see no ground to accept it as probably true. In the disparaging estimate, if it is disparaging, I may seem to have formed of animal intelligence, I may say that I have done nothing but estimate myself. Without doubting my own title to rationality, I observe in myself at my less conscious moments those processes and those feelings which, with certain exceptions, seem to explain the acts of the lowest creatures. And these processes are

united to my highest functions by one steady advance of one single principle, first unconscious, then reflective, but always reasonable.

§ 12. My excuse for these poor yet repeated remarks is on one side the great importance of the subject, and on the other side the cloud of prejudice which darkens it. It must be difficult in any case to study the minds of the lower animals; and it is more than difficult when we come to the task with false preconceptions. It will perhaps be no unfitting end to this chapter, if we try to signalize the most mischievous of these.

I may mention, as a leading cause of error, confusion of ideas as to general psychology. An investigator will discuss such questions as, Have dogs got "self-consciousness," or Have they "the power of abstract reasoning," when the approximate meaning of these terms is not fixed. Now in ourselves we can observe a number of stages, beginning with the dimmest feeling of self, and ending with reflective introspection. It is idle then to argue about the dog's "self-consciousness," when we have not tried to settle, even within limits, what the word is to stand for. So again with the power of "abstract reasoning." If we begin our enquiry without asking in what way, and by what steps of developement, such reasoning is divided from the inference which simply serves to qualify further a present perception—how can we expect to go right in the end? One very great obstacle to the study of animals is defective psychology propped by bad metaphysics.

This vitiates interpretation, but observation itself is largely vitiated. There is a tendency in the lovers of domestic animals towards credulity and exaggeration. As we approach the facts, we too often find that their stories dwindle, like the tales of ghosts. And the tendency, I think, is not hard to account for. The mere unlikeness of the other animals to ourselves suggests something unknown, and the unknown is mysterious. And, besides, there are powers possessed by these animals, which we do not possess and find hard to explain. This suggests the possibility of marvels without end. And another common source of mistake

co-operates. The observers of animals too often forget to note the occasions where stupidity is shown. These they pass without remark and as a matter of course; and thus they escape the difficulty they would find in showing how such different grades of intelligence can exist in one being.* For, if you interpret the successes of a lower animal by direct analogy from the highest functions of the human intellect, you should apply the same principle to all his failures. The total consequence would be a strange compound.

§ 13. The two obstacles, which we have noted so far, are a crude basis of theory and then uncritical observation. We pass from these to the doctrinal prejudices which rise from the idea of evolution. These prejudices show themselves in the desire on one side to minimize the difference between man and beast, and on the other side in the wish to suppress their points of similarity. But, in each attempt, there surely is a want of understanding. If we believe that the highest has come from the lowest by the operation throughout of a single principle, it is surely a derogation from that principle, when we are fain to help it by shortening its course. If its triumph is to pass from one extreme to the other, then by moving the goal you must abridge the triumph. And again, since in any case the actual genealogy has not been recovered, I confess I do not see the object of hurrying the historical progress, and of straining oneself to reduce the chain by some links at one end or at the other. We must agree, I think, that in combating prejudice, the theory of descent has itself used prejudices.

* For some years, while noticing the habits of my dogs, I observed the views taken by others of their conduct, and was impressed by the general readiness to accept any kind of explanation, provided only it supposed a high degree of intellect. In speaking above of powers that we do not possess, I mainly allude to what (perhaps not very happily) has been called the "sense of direction." There seems no ground to doubt that some animals are aware of distant objects, in a manner not explicable by smell, vision, or hearing. There is obviously no great antecedent improbability in the idea that different animals may have diverse senses. And, at the cost of a digression, I should like to suggest that this "sense of direction," if properly established, would be a ready explanation of most forms of second sight among human beings. These phenomena, if we suppose them real, would arise from the survival and abnormal reappearance of a sense in general aborted.

But, on the other side, what are we to say of our would-be conservators of human dignity? How can those, who are not slaves to a childish mythology, persuade themselves that any real interest of their souls can be jeopardized by an ape-like ancestor? For consider, although you deny this parentage, yet the basis of your being is too plainly animal. Though more than a beast, yet, however you have come here, you assuredly are still a beast among beasts. But you will say, "This *more*, that divides me from the rest, is lost if my first beginning is beast-like." Most foolish rejoinder, for what do you fancy is your own private history? If the coming together of two miserable microscopical pieces of matter was *in any case* your origin, what worse is left behind to destroy or threaten your immortal aspirations? If you do not blush to acknowledge the spermatozoon, why scruple to own the paternity of the ape? It is a sensitiveness which seems irrational, and which history will mark as a ridiculous prejudice.

And it is the more ridiculous, since the question of the temporal union of each soul with its proper body was a topic for dispute long before Mr. Darwin fluttered the Church. It is hence not obvious to the mere stander-by how this interesting uncertainty about our ancestors can add much material to the former dispute, or how it can have closed that pathway of salvation which, I presume, the Church must at some time have found. And, until we have some explanation on this head, I think we must conclude to one of two things: if the present outcry is not ridiculous, the former calm was not very creditable.

But it is absurd, so long as in every man's history the transition has been made from the lowest to the highest, to think that by exaggerating the differences which exist between man and beast, you tend to disprove a transition of the race from one to the other.

§ 14. The prejudices, which up to this point we have reviewed, may fairly be classed as intellectual mistakes. But there remain at the bottom of the wish to disparage and belittle our inferiors the threatened hopes of a privileged class. What seems threatened is man's heritage of a life

after death. For, if the beasts are his kin, then, since the beasts perish, he may perish with the beasts, and his claim to that after-land of pure torture and delight seems greatly shaken. But, on this ground once more, I confess that I see no just cause for alarm. And I would first recall to the orthodox Christian champion of human nature something he may have forgotten. The new dispensation knows no *natural* claim on the part of man to anything but unpleasantness. And hence, if we can not hope in our own nature, we can certainly have no reason to dread that nature's abasement.

And then from any point of view that is not quite orthodox, and that attempts to be even a little rational, what loss is threatened in the other world, if we admit our kinship with the lower animals? There are difficulties in the way of their immortality. But are there none in our own case? Are there much more or less in one case than in the other? You will answer perhaps, "I can not draw any line within the animal kingdom." Will you draw me then a line in the life of a man, and mark one period in his strange developement as the birthday on which he is given his immortality? When such questions as these are once discussed by daylight, the answer is certain. Our relationship to the beasts would not lessen any hope, save that which comes from superstition or prejudice.

§ 15. But, as we set ourselves free from our selfish hopes and brutalizing fears, we free ourselves too from the belief in our isolated origin and destiny. The same joy in life, the same helpless mortality, one common uncertainty as to something beyond draws us nearer to all the children of earth. The frank recognition of a common parentage leaves us still the rulers of our poor relations, but breaks down the barrier which encourages our cruelty, our disregard for their miseries, and contempt for their love. And, when this moral prejudice is gone, our intellectual prejudices will not long survive. We shall not study the lower animals with the view to make out a case or a claim, but for the pleasure of finding our own souls again in a different form; and for the sake, I may add, of understanding better our own developement. If such a study

would tend on the whole to inspire us with a warranted self-confidence, it would call up some feelings of self-reproach and pity and shame.

We must return from this digression. We have described the general nature of inference, as it appears in the special kinds of reasoning. We have shown how the principle remains the same throughout all stages of psychical evolution. And, while protesting against the confusion of these stages, we have used the occasion to point out some prejudices. I would end with the remark that, if we will but keep hold of and be in earnest with the idea of developement, we shall lose all wish to pull down the higher or to exalt the lower. We shall ask throughout for identity of principle; and, above all things, we shall not try to get that by diminishing the wealth of varieties and stages of progress in which the single principle has found realization.

BOOK III.—PART II.

INFERENCE—*CONTINUED.*

CHAPTER I.

FORMAL AND MATERIAL REASONING.

§ 1. The words matter and form have an ominous sound. They tend to waken echoes from unknown windings of forgotten controversy. But we mean to be deaf, and these murmurs must not stay us, now our logical voyage approaches its end. We must neglect the metaphysical questions in which these terms would entangle us, and even their logical bearing we shall not try to deal with exhaustively. Nor again do we purpose directly to discuss all the claims of the so-called Formal Logic. Our object in this chapter is to make such remarks, as may tend to clear up what has gone before. And we hope in the process to dispose of some prejudices, and finally to get rid of some clinging illusions.

§ 2. If "formal reasoning" meant that we use a bare form, and that we work with this, as it were with a tool, on the matter of our premises, this assertion might very soon be dismissed. For we have no bare forms we can so take in hand. The principles of Identity, of Contradiction, and of Excluded Middle, are every one material. Matter is implied in their very essence. For without a difference, such as that between the letters A and B, or again between the A in two several positions, you can not state or think of these principles (Book I. Chap. V.). And the nature of these differences is clearly material.

It is no answer to object that the matter here is not special, that the form will work with any material, and that

the given material in each case does not formally affect the result obtained. It will not do to argue that, since with all matter the identical form reappears in the end, and in every case its action is the same—hence the matter is passive. That would repeat a fallacy which has wrought havoc in metaphysics, and which in particular is one main support of Materialism. You can not conclude, because a male proves fertile with every known female, that he therefore supplies the principle of fertility. That would be quite absurd; and it is always absurd, when a result appears from a pair of elements, to argue, Because the *specialty* of the element on one side does not affect the general type of the result, the other element is the sole cause of this type. For something common to all the different cases may exist and may work from its material side, and hence some matter after all may belong to the essence of the formal activity. The "bare" form may be nothing without "bare" matter, though indifferent to the varieties of clothing and colour.

§ 3. If formal reasoning means reasoning with a naked form, then it has no existence. It is a sheer illusion and impossibility. The form, that we use as a principle of arrangement, is not form that can dispense with every matter, but that is independent of this or that special matter. The material element, which remains indispensable, is a general quality which can exist in any number of instances. Thus the form is no longer form absolute but relative.

Now, if we understand form in this relative sense, can we say that reasoning has a formal character? Or rather let us ask what we should mean by such a statement. We might mean, that an inference, if it is to be valid, can be shown as an instance of a certain type. We might mean, that is, that the relation, which is brought out in the conclusion, results from the relations given in the premises, and that all these relations in their proper connection can be anticipated in theory and reduced to formulas. And we might add that, although for actual reasoning you must possess special matter, with which to fill up the blank type of these formulas, yet this matter which falls outside the blanks is wholly inactive. The relation, which unites the terms in the end, is hence not specialized by the particular premises.

It is simply the old relation of the formula which, supporting a load of extraneous content, has come out unaltered. Upon this view we may say that the type is a vehicle.

If this is what we mean by reasoning being formal, then I will not say outright that we speak of the impossible. For by a stretch of fancy we perhaps might conceive a realm in which this logic would be adequate. But it does not correspond to real experience. It is not merely that the syllogism has broken down, and that it covers at its best but a portion of the subject. It is that no possible logic can supply us with schemes of inference. You may have classes and kinds and examples of reasoning, but you can not have a set of exhaustive types. The conclusion refuses simply to fill up the blanks you have supplied. It may show a term not given in the premises. It may produce a relation not anticipated in the scheme, a special connection that arises from the individual synthesis of the elements. And the attempt to provide for these endless varieties is, as we have seen (Book II. Chap. IV.), irrational and hopeless. In this other sense of formal reasoning we can see no more than another illusion, a mistake which is increased if we confine ourselves to the figures of the syllogism, and aggravated if we read those figures in extension.

§ 4. Formal reasoning so far has turned out a mere blunder. Let us look at its opposite, and see what we can make of *material* inference. If this meant that the conclusion was really not got by work on the premises, but required the addition of some other matter, then of course it would not be reasoning at all. But if material reasoning merely means such reasoning as is related to fact and refers to reality, then this is an essential quality and mark of every kind of inference. That judgment and reasoning could be confined to ideas was an error which long ago we got rid of. So that if "material" is a name for what transcends mere "concepts" and commits itself to truth, then of course all logic must be material.

But if, leaving such clear truths and such plain mistakes, we understand our term in a different sense, we may get some fresh light thrown upon the subject. Material reasoning might mean such an inference as neglected wholly the form of

are ever quite pure. We may indeed *use* that element in each which is strictly relevant, but I think we shall find that other elements are there. And these passive diversities, which vary or might vary, can be called once more the matter of the argument.

If we had an inference in which all the qualities of our content were active factors in producing the result, in that case the matter and the form would be inseparable, and we could no longer distinguish them. The argument would indeed belong to a class more general than itself, but its working principle would be confined within itself. There would be nothing that was passively carried into the conclusion; and so, in this sense, there would be no matter.

But if such reasoning is an ideal which we can never realize, then everywhere we may speak of the form of an argument, as distinct from its matter.

§ 7. Let us sum up the result. There is no absolute divorce of matter from form, but there remains after all a relative distinction. All reasoning is formal, and is valid solely by virtue of its form. Every inference not merely belongs to a class, or a head of synthesis, but each has a principle which is, so to speak, its soul. In each we can distinguish between passive and active, between the part that carries and the part that is carried.

But, having gone so far, if we please we may go farther. Having distinguished we may separate. We may extract the active principle of the inference, and may state it in the form of a general axiom, exemplified and instanced in the actual argument. We may write it at the top of this actual arrangement, and call it, if we please, the major premise (cf. Book II. I. Chap. IV.).

§ 8. It is *not* a major premise; it is not any sort or kind of premise; for it never has appeared before the mind. It is a function, not a *datum;* nor will any way of treatment transform its character.. The major premise, we have seen, is an illusion (Book II. Part I.). We have already exposed it, and return to it here that we may finally show its root in the truth. It is worth while to repeat ourselves, if we only in the end can get entirely clear of this obstinate prejudice.

The defender of the syllogism may wish to take advantage of our latest result. If every inference has a matter and form, then, by using this form as a major premise, we can show every inference in the shape of a syllogism. But this possibility of reduction, he may urge, is a proof that the syllogism is the normal type. And I will add a few words on this exhausted theme.

In the first place I may remark that all valid arguments may as well be reduced to the shape of equations. If successful torture is a source of evidence, then torture will disprove, as well as substantiate, the claims of the syllogism.

But this is a mere *argumentum ad hominem;* and it is better to expose the root of the mistake.

§ 9. We have proved that there are reasonings without any major premise. We have proved that to abstract all the principles of these reasonings, and to set up a complete and exhaustive collection is quite impossible. We have proved again that the principle of an inference, when procured and explicitly stated as a major, may be something quite strange to us, that we do not recognize, and that we never could have used as a premise in argument. I will not do more than allude to these points, which I think have been made evident, and I will go on to consider the last defence of the syllogism. It may be said that, if in the end all reasonings will take this form, it must be in some sense a general type.

Let us consider this claim. It rests on the fact that, having used an inference and obtained a result, you can then abstract the form of that inference. You *did* not use this form as a premise, since it was not a *datum*. But you can use it, now that it has come into your hands. And, so restated, the inference after all will be a syllogism. This, I think, is the claim, and we now have to show its utter worthlessness.

§ 10. It is worthless for this reason, that your major, when you get it, may do no work. It may stand above the actual process, and contribute nothing to the production of the result. What will happen is this, that your minor will contain the real operation, and the major will be simply not used at all. Let us take the inference, "A precedes B, and B is contemporaneous with C, so that C must be later in time than A."

We have to make this take the shape of a syllogism, and we do it by abstracting what we call the form. "What is prior to anything is prior to that which co-exists with the latter," or, "When two events co-exist, and a third precedes the first, it stands also in the same relation with the second;" this becomes the major. In the minor, of course, we have to bring the instance under the principle; and the minor therefore will be simply the whole of the former premises. Then what is the conclusion? That of course asserts of the instance in the minor the predicate given in the major premise. The predicate is a relation of antecedence and sequence, which, when transferred to the instance, is the relation which holds between A and C. And the result is undeniable; it is certainly correct; but then it does not *result from* the major. It is simply the old conclusion from the old premises, which are now restated in the minor. The minor unassisted *did* get out the result, and it is natural to suppose that the minor still continues to get it; while the major remains inactive and but idly presides.

Let me further explain. We are offered something in the shape of a syllogism, and are supposed to use a function of subsumption. Do we use this function? Do we, holding the principle, then fill up the blanks with A, B, and C, and so get our conclusion? Or is it not rather true that we do precisely what we did before, that is make a construction of A, B, and C, and so get the relation? But, if so, the major will be simply otiose. I do not say that its presence makes no kind of difference. For at first our construction was not reflective; it was performed unconsciously. And now we, consciously and with some foreknowledge of the outcome, apply the same function. But still we apply it; we do not cease to arrange A, B, and C in our minds. We do not pass into the category of subject and attribute, and so get a predicate A–C by a mere subsumption.

Take another example. We have two pairs of equals, AB and BC. By holding these together we perceive that their quantity is the same throughout. From this we go to the principle, "When two terms are each of them equal to a third, all these terms are equal." We then construct a syllogism with this axiom as the major, and bring out the old conclusion, A = C. But, in getting this result, do we cease to obtain the relation of

equality by holding A, B, and C together, and by perceiving their identity? Do we say "A and C are equal to the same," and then, *without any synthesis through* B, go on to our conclusion by a mere subsumption? Is not the other course more natural, and is it not more rational? If we keep to those cases where the subsumption is *possible*, is it not somewhat frivolous?

§ 11. It is in most cases possible. If you do not mind frivolity, you can torture *most* inferences into a syllogism of the kind which we have just described. Nay, there are *some* cases where no torture is required. For where an operation has been repeatedly performed, the connection between end and beginning grows familiar. We can dispense at last with a lengthy process, and, using the axiom, go at once to the result by a mere subsumption. And I will not deny that the axiom of equality may be so made use of. But the subsumption in these cases will be rarely *explicit*. Even here what we use will *not* be a syllogism. Still we do here use a function which, when stated explicitly, would be syllogistic.

In these cases the major may be said to do work. The function which established the axiom does not operate; and the conclusion is reached by an act of recognition, which, when you make it explicit, and so gain another premise, will fairly take the shape of a syllogism. We admit that (in these cases, which still are not syllogisms) the reduction is rational; and we admit again that in *most* other cases the reduction is possible, though utterly frivolous.

§ 12. But for all that the claim of the syllogism is worthless, for the reduction is not always even *possible*. You must come to a point where the attempted subsumption proves wholly illusory. For consider a regular syllogism itself. This contains a function which is not a premise. If I argue, because any man is mortal and John is human, that John must die, the general form of the synthesis is not given. We must write the whole of the argument as minor and conclusion, and for major we must take such an axiom as "What falls under the condition of the rule falls under the rule." Under this major our former inference is subsumed as a special instance. But now mark the difficulty. This fresh subsumption is an active

function, and hence its principle should find expression in a major. But what is this major? Suppose we agree that our last axiom was ultimate; then once more this same axiom must be written at the top, and it thus will figure as the principle of itself.

What I mean is this. If you *will* reduce to subsumption, in the end you must come to something final, and your subsumption will consist in the use of a principle, in order to bring another use of this same principle under itself. You have first an argument based on a certain function of synthesis; you have then the connection of this argument with its function, based once more on a function of synthesis; and the first and the last of these functions are identical. They are absolutely the same. But, if so, I would ask, is your reduction not worthless? If you use in the end the precise form of synthesis, which you used at the beginning, why not be willing to stop at the beginning? Why not openly say, I *used* a function but did *not* subsume under it; and my further reduction has simply made me conscious of what I did do? It has not changed the function; it has but given it self-consciousness.

Reduction to the shape of a syllogism makes explicit the function of the inference, and it does not substitute another function. But from this we may proceed to a result unwelcome to the friends of the syllogism. For if the function we begin with is *not* syllogistic, we deceive ourselves in thinking that, by going back far enough, we transmute its character. Suppose that A may be *b* and may be *c*, but nothing beyond; and then we argue from the absence of *c* to the presence of *b*. This clearly is not syllogism. But you say it *is* syllogism, when you write "Where I can not do otherwise I must," and repeat the inference as a case of this major. Entire delusion; for how is it that you know that your minor comes under the condition of the major? By a function of subsumption. And the principle of this subsumption is whatever axiom you agree to take as the basis of syllogism. But then that principle itself is not so ultimate as the axiom that you must where you are unable to do otherwise; and hence it must stand and be based upon this latter axiom. What is the consequence?

The consequence is that in the syllogism, which you manufacture, you *really do use* the more ultimate principle which you used before. But, if your reasoning actually *were* syllogistic, you would have to use the subordinate principle. This would mean that the use of a higher function is taken as the use of a lower function, and in the end, if you carry out your process, must appear as one case of a *subordinate* principle.

§ 13. You can not transmute all inferences into syllogisms by extracting their general function of synthesis. For that function, when exhibited in its abstract form, continues in most cases the very same work which it performed before; and in some cases it can not do else than continue. The difference, which we have made, has been therefore no difference to the action itself. It has been a difference to our knowledge of the action. We have not changed the nature of our function; we have simply made a reflection on that nature. But, if so, we must say that the syllogism, which we have constructed, if taken as showing the actual process, is a blunder and mistake. It is instructive only if you take it as a mere mode of reflection, by which we explicitly state and lay down the function which we use apart from that reflection.

This final exposure of an old superstition shows the root by which it keeps hold of our minds. There is in our arguments a form more abstract than the arguments themselves. And it may be useful to separate this form from its matter, and so perform self-consciously the very same act which we accomplished unawares. And if this extracted major be understood as the *statement* of a principle which *operates* in the minor, and if we remember that it is the minor, and the minor alone, which in these cases *gets the conclusion*, there is then no harm in our continuing to use a logical tradition. But, since we are certain not to remember, and since others (if we remember) will forget, my voice, if I have one, is for putting under ground this much decayed object of unpleasant warfare.

§ 14. Let us cease to pretend that the principle is a premise. Let us try to call things by their real names; and, instead of applying for the production of a major, simply ask for the form and principle of an argument. This is rational and useful; it is good alike for theory and for practice. By

finding the functions made use of in our proofs, we can classify them with a view to a further understanding. And we may thus avoid some mistakes in the actual work of reasoning. For by an exhibition of the abstract principle we can distinguish what is relevant from irrelevant detail. When doubtful of an inference we may desire to know how the conclusion is got. We therefore ask for the active function, and we make this explicit, by direct abstraction from the inference in hand, or indirectly by a previous comparison with other instances. In this way we can test the form, either by a simple scrutiny of itself, or by seeing how it works in fresh applications and further deductions. And this process is useful as well as rational.

§ 15. There are two parallel mistakes, which we must try to avoid. We must not fall into thinking that our actual inferences are proved by deduction from a general form. And we must shun the idea that this principle itself is proved by the collection of working examples. The universal neither demonstrates, nor is demonstrated by, its particular applications.

It does not demonstrate them for this reason. It is not a statement which is believed when received, but a function which must be worked in order to be seen. And it can not be worked quite pure in a vacuum. Some matter must be used. And hence, when we lay down the abstract principle we really are using a concrete instance, though we distinguish in that instance the matter from the form. But this shows that in the end our criterion must be an individual operation.

Take for instance the axiom, that things equal to the same are equal to each other. The only method of perceiving this general truth is to make an experiment in which you distinguish the equality from the other attributes of the terms, and observe what each element contributes to the result. We must use in the end this individual test.

"But," it will be said, "this criterion in its use is universal, and our particular reasonings are proved by subsumption under its conditions." This is the old mistake. Our fresh cases, as we saw, are themselves proved true by a renewed

experiment. Our criterion serves merely to show us the essence of the act which we perform, and to give us in the operation the distinction between its form and matter. But the consciousness of this distinction, I must repeat, is not the proof of the actual conclusion. You might just as well say that the fresh use of the function was a proof of the axiom.

§ 16. And this last remark leads us to the parallel mistake. No amount of mere instances, where the function is used, would demonstrate its principle. Their number and their variety are precisely that part of them which is not relevant to the principle itself. When operations, that look like analogous instances, all have consequences which square with the nature of things, this affords a presumption that some valid principle is present though unknown. But the proof of this principle comes solely from abstraction; and the number and the differences of our applications help us only so far as they help us to this goal. They work not by the support but by the destruction of each other. They prove the axiom by discarding themselves, and they all unite to demonstrate each by reciprocally discounting their private irrelevancies.

We may so put the result. A principle will neither demonstrate its applications, nor can it be demonstrated *by* them. The principle is demonstrated when we see it *in*, and as the function of, an individual act. The instance is demonstrated, first by the concrete performance of the function; and secondly it is shown to be an instance, when in that performance we distinguish the form from the passive matter.

§ 17. You can not reduce all reasoning to syllogism. Every inference is necessary, and the necessity of the process can be formulated as an universal truth. This principle is more abstract than the inference itself, and more abstract than the conclusion which the inference reaches. But then itself is not one of the premises. It is that which developes the conclusion from the given, but it is not given itself; and the attempt, as we saw, to get it into the given, conducts us to a process that is simply idle. It is this confusion between principle and premise which has served to protect the old age of the syllogism.

And on this basis we saw that we might effect an under-

standing. If it were admitted, on one side, that the syllogism supplies no general type of the reasoning act, it might be allowed, on the other side, that it is a mode of stating the principle which is used in that act. It *is* universal as a form for showing the explicit and conscious exercise of a function.

But, for myself, I must repeat that, friendly as I am to the friends of the syllogism, I can not venture to support this compromise. When I think of the futile and fatuous performances enjoined upon the student, when I think of the nature of too many of his instructors, I feel sure that the syllogism, if it continues to be taught, will be taught as a form to which we must reduce every valid argument. It would never be taught as a form in which we may state our knowledge of an argument's principle. And then, even if the orthodox logic might be learnt in this heterodox spirit, we should cover in the end but a part of our subject. I can not speak from experience of the more active side in the educational suffering, but still I must venture to offer a suggestion. Most humbly I would submit to all teachers who are resolved to stand by the syllogism, that they are teaching what is either incomplete or false. And if they care not for truth but for practical results, then I think for the sake of their much-enduring pupils they are bound to make at least some trial of the Equational Logic. There is reason to think that it might answer better, and I hardly see how it could turn out much worse.

§ 18. We have now finished all that we desired to say on the relation of matter to form in logic. We have seen that no reasoning is absolutely formal, but that in logic, as indeed in all other sciences, there is a relative distinction of form and matter. We then entered a repeated and final protest against the idea that action was subsumption under a form of activity. And we expressed, not a hope, but a pious wish that together with this false notion the syllogism might be banished.

We may end these inadequate remarks by a warning, that both matter and form bear other senses, which we have not mentioned. An inference may be good in point of *form*, when, though the substance is incorrect, the conclusion follows from the premises given. An argument again is *formal*, when its steps are drawn out in regular detail; or, possibly, when the

principle is explicitly stated. *Substantial* again or *material* may mean much the same as *implicit*. A process once more is *merely* formal, when it effects an arrangement which is not material to the substance of the case. But, where the form is the essence, *mere* material alteration is likewise irrelevant. The further question how the form stands to the universal, turns upon the categories of relation and quality, and can hardly be discussed outside Metaphysic. And with these disjointed statements we must pass to a theme which has long been awaiting us.

CHAPTER II.

THE CAUSE AND THE BECAUSE.

§ 1. We have seen that an inference is an ideal operation which gives us a result. The conclusion comes *because* of the process, and it is natural to imagine that the process must therefore answer to the *cause*. If so, we should be led by a very short cut to a far-lying goal. In reasoning we should always be knowing by causes, and, at least for our knowledge, the connection of truths and the course of events would be one and the same. But such a rapid success is itself enough to awaken suspicion. Great results in metaphysics are not reached so easily, and a promise of short ways is almost sure to conduct us into error. We should find that enquiry would confirm the doubt excited in our mind by this general presumption.

Is the middle in reasoning always the cause? No doubt we have some ground for taking this as true. For wherever we say "because," there must be an inference. Wherever we ask "why," we ask for a reason; and a reason, when given, is once more a because. And so we might conclude, since to infer is to reason, and since in reasoning we always make use of a reason which gets the result, that the middle in an argument represents the cause, and that the conclusion stands for the effect of the premises.

§ 2. It would be irrational either to affirm or to deny such a general assertion. For we can not say at once what it signifies. The word "cause," we know, has a great many meanings; and its ambiguity does not lie in mere verbal looseness, or rest on the chance obscurities of language. It is the cloud that arises round the common source of many great problems; and, if we tried to penetrate, we should at once be lost in the mist of metaphysics. The "cause" may not be

distinguished from the "principle," and then every universal connection will be a cause. On the other hand "cause" tends to pass into "substance." It appears again as "energy," "force," and "power," accepted by some as the essence of reality, while rejected by others as absolute illusion. The controversy, that springs from this radical difference, would be fought over the fields alike of metaphysics, psychology, and physiology, and would embroil us everywhere in debate and uncertainty. We should ask in vain for any harmonious finding as to the bodily process which conditions my feeling of energy put forth. We should find no answer if we desired to know the actual deliverance of consciousness itself, and begged for an account of what we feel as will. And lastly, when we enquired if Force or Energy is anything conceivable, if it is an idea self-consistent and so far possible, or a coarse delusion that breaks up before scrutiny—we should receive once more conflicting responses.

If we mean to ask here how the grounds of our reasoning stand to the causes of our real events, we must begin by limiting the meaning of our term. Cause must be confined to the antecedent member within a law of the sequence of phenomena. I do not mean that the cause is to be the *unvaried* event, that it is something which, throughout a collection of instances, *has* happened in time before something else. We must take it in the sense of the *invariable* event. It is that to which, *supposing that* it happens, something else will succeed. In other words it is the *hypothetical datum* from which there comes a *necessary* consequence. It is an universal element in an ideal law of the sequence of phenomena.* (Cf. Book I. Chap. II.)

* The term "unconditional" would merely express this same idea. If B comes *invariably* from A, it must come unconditionally; for the introduction of a condition would modify A, so that B would no longer come from *it*. And again, supposing that we could say no more than that "B follows from A, when A is conditioned," I do not see how in that case we could assert that B follows invariably from A. We could not assume that an alteration of the conditions is impossible, or that no possible alteration would affect the sequence. I do not ask if the knowledge of the invariable and unconditional is possible in fact. Cf. § 14, and *infra* Chap. III. § 11.

§ 3. If by cause we understand the antecedent in a law of the succession of phenomena, we can at once proceed to discuss the question, Are the cause and the reason always the same? And we may divide the enquiry into these two parts. (i) Is the cause, as we know it, always a because? (ii) Does every because appear as a cause?

(i) Is causation, in the first place, known by inference? Can we say there is a cause, when we do not reason? This would surely be impossible; for, in perceiving the cause, we must perceive the law, and, possessing the law, we have at once in our hands an universal connection. And, to judge, Here is a cause, is to take the antecedent as an instance of this law, and to take the result as a necessary consequence. But this process is reasoning.

It is useless to deny it. It may be said that the actual process of causation is a real chain of existing things, and is no ideal construction formed by our minds. But this objection, if true, would be quite irrelevant; for we are talking of cause and effect as we know them. And without such a reconstruction it is impossible to know them.

§ 4. I may be told that the cause and the effect are presented, that they are given to sense. Well, for argument's sake let us suppose that the sequence is confined to a single sense-perception. It does not follow from this that our senses present it to us. We surely never could *see* that mere B follows mere A. We see a complex, a tangle of details, from which we separate this thread of succession. The so-called fact, that mere A comes immediately in time before B, is an universal connection, which is reached by a process of intellectual abstraction. Itself is ideal; it is nothing that by any possibility could exist. For A is not a phenomenon, nor is B a phenomenon, but both are abstractions. Their relation again is no phenomenal sequence. It is purified from a mass of irrelevant details, it is removed from the flux of actual events. It is a truth that is true, not anywhere but in the region of universals and the world of hypotheticals. And the result of this is that to know the law is to know the product of a reasoning by abstraction; to know the instance is to reconstruct this case as a synthesis of the law with a particular

element; and to know the so-called particular fact, that A comes before B, is either to perceive something which in part has no connection with the mere and pure antecedence of A to B, or else must be really in a particular instance to apprehend the very law itself. (Cf. Book I. Chap. II.)

For example, if I see a man fire at an animal and say, The shot was the cause of death—the cause is here clearly a because and a reason. For I have isolated this thread from the sequence of phenomena, and now unconsciously take the particular fact as an instance and application. Thus let the whole act of firing be A (*cde*), and the fall of the animal be B (*fgh*); the apprehended connection will be A – B, and it is because we perceive this that we are able to say, A (*cde*) and *therefore* B (*fgh*). The inference is probably not explicit, but it certainly is there. For how could I *use* the observed succession in *other* cases, if it was not universal? And how in *this* case could I speak of causation, as distinct from mere succession, if I did not take *this* sequence as having a principle which connects its terms? But that is reasoning and inference.

§ 5. Causation is no mere phenomenal sequence. It implies a principle felt in the succession of the elements; and that principle is a connection which can not be presented. Let us dwell on this truth. We have seen that it holds with a simple succession, but it holds still more with a true process of causation; for that (if we go on to understand it rightly) can not possibly be a *simple* relation of sequence. It is a change in time, and no change would take place unless it arose from a meeting of elements. To apprehend causation we must first distinguish the elements, before they have come together. And thus we get to perceive what may be called the "conditions" (p. 195). But these conditions, when asunder, are not yet the cause. To make the cause they must come together; and their union must set up that process of change which, when fixed artificially, we call the effect. Hence to know causation we must (*a*) first have the elements in ideal separation; we must (*b*) then ideally reconstruct their meeting, and from that (*c*) perceive the issuing change. But such a knowledge surely can not come from presentation.

To repeat—you can not properly talk of causation, unless you can say first that something was, then that something happened to it, and that so something else appeared in time. The full "conditions" are not the elements apart, but the elements together with the change which unites them, and combines itself with them. It is in the moment when this union is realized, that the process begins; for otherwise the "cause" might exist for ever, and not begin to produce its effect. But this process of change *is* itself the effect, and nothing else can in strictness have a right to that name. We have first the elements apart, then their union, and lastly the product.* You can not even think the law of your instance without an ideal synthesis through identity.

Thus to experience a definite relation of succession demands the separation of irrelevant and relevant. But this is abstraction, and therefore inference. And to experience that

* Hence we see that a cause demands *previous* change. It can not exist without producing its effect, so that, if the effect is to have a beginning, the cause must have a beginning also. To produce the effect it *becomes* the cause; and that becoming is a change in time, which naturally calls for another cause by which to account for it. Hence *first* cause is pure nonsense.

Again the effect is the change which issues from the union of the conditions. It is a passing event, and it is only by a licence that we allow ourselves to treat it as a permanent product. Being a phenomenon in time it can not *persist*. Once more the effect must *follow* the constitution of the cause; it can not begin until after the moment when the synthesis is complete. It is impossible it should ever co-exist with its cause, and the belief that it does so arises from confusion. For we forget that both cause and effect are events, and we tend to think of them as substances maintaining an identity in spite of events.

But, though the effect succeeds, it succeeds *immediately*. Causation is really the ideal reconstruction of a *continuous* process of change in time. Between the coming together of the separate conditions and the beginning of the process, is no halt or interval. Cause and effect are not divided by time in the sense of duration or lapse or interspace. They are separated *in* time by an ideal line which we draw across the indivisible process. For if the cause remained for the fraction of a second, it might remain through an indefinite future. *Permanent* cause, unless you take cause in another meaning and treat it as substance, is simply nonsensical. I should be glad to discuss some of the difficulties which arise in connection with causation, but the questions raised would hardly be logical.

succession as following a change implies a reconstruction by identity and a further inference. But the main point is this. To recognize a succession as a causal sequence means to perceive the facts as a presented law. And to see the law in the facts is to unite the facts by an ideal principle; and this is to reason. In other words to say, This phenomenon B was the effect of A, implies the perception of an ideal connection between A and B. But to know by means of an ideal connection is to know that the fact is a result of that connection. And this must be inference. It may be latent and unconscious, yet still it is there. The mere conjunction has become a connection, felt as such. And this connection is now used with other conjunctions. But, if so, the facts are united in my mind because of an universal.

§ 6. The thread of causation is nothing visible. It is not seen till it is demonstrated; and it is demonstrated solely by the ideal decomposition and reconstruction of events. It is an ideal unity which *we* discover and make within the phenomenal flux of the given. But it has no actual existence within that flux, but lives first within the world of universals.

And from this we may proceed to draw a consequence which serves to transform a worn-out controversy. To ask if the belief in cause and effect results from the mere repetition of sequences, is to put the question in a form which ensures and necessitates an erroneous answer. For, if the definite sequence has once been perceived, what need can there be for further repetition? The knowledge that *mere* B has followed on *mere* A, would itself be the very goal which we desire to reach. But on the other hand if this pure sequence is *never* experienced by mere sense-perception, then, with all our repetition of innumerable perceptions, we do not ever repeat the experience of that sequence. The true point at issue is the way in which, from impure presentations, we derive the pure intellectual sequence of B from A. And we have seen that the process is in principle abstraction, and in its essence consists of ideal analysis. The repetition serves merely as a help to the abstraction (Chap. I. p. 480).

§ 7. Since to recognize a case of cause and effect, is to apprehend the instance of a law universal, and which can not be presented in sense perception, we are safe in saying that,

in order to know causation, we are forced to reason. And in this connection we may perhaps be excused, if we pause to consider a radical mistake. Reasoning, we are told, consists in a seeing with the eye of the mind, by which we perceive "details now unapparent to sense." It is "a mental vision reinstating unapparent details." "What is termed the explanation of a phenomenon by the discovery of its cause, is simply the completion of its description by the disclosure of some intermediate details which had escaped observation." * It would be difficult to find any statement more opposed to the doctrine which we embrace.

And it is a statement which collapses before the smallest scrutiny. For suppose the whole mass of detail to be present, suppose not the smallest element to fail—is this huge congeries an explanation? Or what is explanation? Does it not rather consist in finding within this mass the threads of connection? But these threads are no details, and they unite no details, apparent or unapparent. For they are made by abstraction, by a getting away, from the details of sense and their sensuous relations, to universal laws which subsist between elements too pure to be presented. The sequences of science may be got by observation, and may be given by description; but it is an observation which mutilates phenomena, and a description which shears off all those details which belong to the very essence of presentation.

§ 8. To explain a fact you must exhibit it as the instance of a general principle or meeting of principles. The mere beholding an intermediate something would be *by itself* no kind of explanation. It is an old superstition to look for causality in a something coming *between* the first fact and the second one. You can explain without any sort of intermediate, and, when you have intermediates, you may still have not explained.

I am far from wishing to write down these platitudes, but they may serve to dispel a thoughtless mistake. Suppose that I place a glass bottle on the fire and it presently breaks.

* G. H. Lewes, *Aristotle*, p. 76. I do not raise the question how far Mr. Lewes's later (and, I presume, borrowed) utterances are consistent with this view. It is a typical mistake, and as such may be examined.

"If you had better eyes," I shall hear the remark, "you would see the molecules, and see them irregularly increasing their distance the one from the other. Then the bottle would separate, and this has been explanation. For you have seen the intermediate hidden phenomena." But, I reply, I have seen an enormous number of other details, and, if I fail to make the right connection, I have not perceived the cause. This connection is moreover a preparation of mine, which isolates one thread from the tangled whole. Is it really *not* possible to have, as we say, the cause before our eyes, and then fail to perceive it? Is presence of a mass of detail in perception, and apprehension of the relation between two elements, exactly the same thing? If one is left at the end of one's devoted labour incapable of making such a simple distinction, I almost think it would be better not to talk of having "toiled through modern German philosophy" (*ibid.* p. 80).

Presentation to sense of intermediate detail is in itself no explanation; and without an intermediate you may still explain. If the case is taken as the instance of a rule, even that by itself is *some* explanation. I know it has been said, and by those whom I respect, that we have nothing here but bare tautology; that it is frivolous to tell me that this bottle breaks *because* all bottles break. But I confess I never could see the *bare* tautology. For the particular nature of our one bottle is in this way connected with a general law. It does not break because it is a black bottle, or a quart bottle, or a bottle made by an infidel and on a Sunday, but because it possesses an unstated quality common to other bottles. And this quality *is* a reason why it breaks. The explanation of course does not satisfy our desires, since we want to make the quality explicit; but, so far as it goes, it does give us some principle, and it can not fairly be condemned as tautologous. In just the same way an apple falls down *because of* gravitation, and this knowledge connects the other qualities of this falling body with a general attribute of material things. The explanation, I admit, leaves much to be explained; but I can not see that it gives us mere words. On the other hand, however, I do not perceive that it presents us with any intermediate details.

§ 9. But what is the truth which underlies this error which we have been considering? It is the mediate character of all explanation. You show that a connection, which seemed immediate, is not what it seemed. You point out the link which serves to unite the second element with the first. And, starting with this truth, the mistake we are discussing goes on to turn the link into one constituent part of the chain of events. It confuses that which is mediate ideally with that which is separate by an interval of time. Thus, if Protestants commit suicide more often than Catholics, we explain this fact by showing that suicide is increased by civilization, and that in the main Catholics are more ignorant and uncivilized. Higher culture is mediate between Protestantism and suicide, but it surely is not a detail which always intervenes in time.

No doubt in a very large number of cases, in order to find the true immediate connection, you are forced to enlarge the presented phenomena. Where analysis fails, you supplement the given by ideal synthesis, and find in that supplement the true connection. But this is accidental, and it is not essential. The essence of the explanation of phenomena consists in getting the relations pure, and by analysis of the facts connecting their detail with those pure relations. It does not consist, and it could not consist, in the mere unintelligent gaze through a microscope.

§ 10. It is not my object to ask in the end what it is to explain, or to discuss the ultimate metaphysical nature of a law or principle (Book I. p. 88). But our rational instinct prompts us to assume that we explain by offering something universal and something real. Now the "laws" of phenomena are assuredly universal; they give not the facts but a garbled extract. And their truth is hypothetical; they do not even pretend that the elements, which they connect, have actual existence. Hence the unfortunate holder to sensuous reality is driven to face a desperate alternative. He must explain the real by what is not real, or he must assert that reasoning and all explanation never go beyond mere sense-presentment. He must persist that it makes a mere addition to the detail which comes to the senses or the sensuous fancy.

But we have seen that his alternative is a common-place blunder. For causation, as we know it, is never the sequence of actual phenomena, or of anything that could exist in the phenomenal series. No imaginary detail, added to the given, could do more than increase the existing confusion. If the history of a thing is ever its explanation, this is true because history can never be sensuous. By design, or even against its design, it must mutilate the facts, and substitute for them a thread of connection which never could have been visible. Our reasoning and our knowledge of causal sequence is not ideal in the sense of an imaginative resurrection, or a miraculous increase of the sensuous supply. It is ideal because it is intellectual, because it demonstrates a connection between universal elements, because it substitutes for fact, and connects the facts by, a rational construction.

§ 11. Even where we explain by assigning the cause, we must rise into the world of ideal arrangement. For inference is never a mere presentation, and the knowledge of causation, we have seen, must be reasoning. The first of those questions, which we raised at the beginning (§ 3), has been answered affirmatively. To know the cause is to know the because. But the second enquiry remains unanswered. When we know the because, or the reason why, have we learnt the cause? Are both one and the same? We must now endeavour to find an answer to this question.

(ii) If cause were understood in the sense of *principle*, then every reasoning would rest upon causation. It would be a cause in each argument by virtue of which we proceeded to get the result from the premises. But this identity of principle and causal law is the very point which is under discussion. And if causation is confined to sequence in time, the way to put the question is this, Can the principles of reasoning be all exhibited as laws of sequences? Must the principle of knowledge be a principle of becoming?

Is the because in reasoning always a cause? Most clearly we can not make any such statement. When, from A = B and B = C, we conclude to the equality of A and C, it is hard to see how any common relation of both with B is the cause

why A *comes to be* equal to B. And the enquiry, once opened, lets in a torrent of kindred objections. Is the proof in geometry the cause of the conclusion? Does the result *turn* true because of my construction, or does it only *turn out* true for my knowing mind? Two coins are proved to have similar inscriptions, because they each are like to a third, but the cause is not found in this interrelation. The cause is the origin from a common die. If a vessel has sailed for London or Liverpool, and we know that it has not sailed for the former, we argue that its course is shaped for the latter. But is our middle a process of actual causation? We can hardly say this, and we could give no reply to an endless variety of similar questions. So far is the middle from always presenting us with the cause of the conclusion, that, given an inference, we can draw no presumption in favour of that view. The truth is in general perhaps more likely to lie with the other alternative.

§ 12. The question "Why" is always ambiguous. It asks indifferently for the cause of the thing, or for the ground of my knowledge. And the answer "because" repeats these two senses. It gives us alike the reason of the fact and the reason which has led me to believe in its existence. And it offers no sign by which we may distinguish these radical differences.

The presumption, if there is one, is against the identity of the cause and the reason. We can not in any case treat them as one, if we have not some special ground for our assumption. Wherever the premises represent a reality in time, which, actually and by its own necessity, goes into a construction—wherever that construction itself is real, and the quality or relation, that appears in the conclusion, is its immediate result—in these cases, and in these cases alone, the because and the cause must be identical. Wherever, on the other hand, a division or a junction is made by the arbitrary choice of our minds, there the reason for knowing and the reason for being fall hopelessly asunder.

§ 13. We shall return to this theme in a following chapter; but for the present we may endeavour to close some sources of dangerous fallacy. And the first of these rises from an

obstinate confusion. Every conclusion possesses two characters (p. 211). It is a psychical event and a logical judgment, and what is true of it in one of these aspects, may be wholly false if you take it in the other. Now, if you consider the judgment as a mental occurrence, the premises are always part of its cause. The presence of these elements, together with a mind in a certain state, at once sets up that psychical change which gives the conclusion. The logical grounds are psychological conditions, and as such they do work in bringing about the existence of the result. But we turn this truth into absolute error, if we go on to say that the premises are the cause, or even part cause, of the existence of that which the conclusion affirms. For it is not the *content* of the final judgment which thus has issued from the synthesis of my mind with the premises. It is not the relation of A to C which is caused by the apprehension of AB together with BC. What is caused is nothing but an act of judgment, and that act is a genuine psychical result, though the content it affirms may have no kind of reality. It is the bare event of assertion, and not the truth of the matter asserted, which follows as effect from the psychical conditions. The cause in psychology and the ground in logic must be carefully distinguished. The two series may run parallel, and may partly coincide, but they are never identical.

§ 14. We may notice in passing a possible objection to this coincidence of causes and grounds. It might be said that a cause must produce its effect, while logical grounds may be idle in the mind, and fail to produce a logical result. But the objection would rest on a misunderstanding. If we consider the logical process from its aspect of a psychical movement, then no doubt we may say that the consequence does not follow from the premises, unless another condition is presupposed. We have to assume a mind, not merely present but specially active, and therefore intervening. But, we may urge in reply, that the conclusion can still be said to follow, since the function exerted by the mind is regular. When we say "it follows," we mean that it follows given the activity of a normal intellect, which abstains from exercising arbitrary choice. And our assertion is thus elliptical but is not really

incorrect. For this same elliptical character, we may add, is found in our judgments as to cause and effect. We never exhaust the whole mass of conditions which produce the effect. The event never comes, and it never could come, from the abstract selection which we call the cause. We imply the presence of unspecified conditions, but since these are normal, we omit to mention them. Our full statement would run, Given such conditions in relation to the real, *and not counteracted*, and we have the effect. In just the same way, Given certain premises in relation to a mind, not blinded or biassed, and you have the conclusion. And this answer may for the present be taken as sufficient. Logical grounds may be considered as psychical causes, as long as you keep out one supposition. But, if you suppose the intellect of its own free choice to superadd a foreign and irregular factor to the premises before it, then the premises cease to cause the psychical conclusion. It was this grave suspicion which underlay and gave its strength to the objection; and it will rise again to give us other trouble in the following chapters.

§ 15. And finally we may point to an obvious mistake. You may suppose that the consequent is more concrete than the ground, or the effect more complex than the cause which produces it. These are parallel delusions. If you understand by "conclusion" the whole construction, this is certainly more complex than each of the elements, since it is the union of these separate elements. But if "conclusion" stands for one part of the construction, then not only is the synthesis of the premises *more* concrete than the consequent, but the premises, if taken each by itself, may none be more abstract. So with cause and effect. The effect, if you take it without isolation, has endless connections with other phenomena, and may be said to influence all succeeding history. But then, on the other hand, why should you choose to isolate the cause? That also exists by virtue of relation to the existing universe, and is just as complex as you please to take it. If you were to isolate effects and *not* to isolate causes, you might emulate an achievement of Mr. Spencer,* by a proof *a priori* that

* See his Essay on *Progress*. The remark in the text is a criticism of the proof as it appears in that Essay.

history must needs begin with the complex and advance towards the homogeneous. The one demonstration would, logically speaking, be as valid as the other.

§ 16. Let us return from our digressions, and gather the result obtained in this chapter. We have seen that, in order to perceive causation, you must always use reasoning. The cause, as we know it, must be the because. But there we are stopped. We can not assume that the reason, where we have one, is the cause of the consequence. In some cases, no doubt, it does appear as the cause, but in others we can not see how this is possible. And we concluded that no general presumption could be raised. But one thing we could see by anticipation; wherever the mind makes an arbitrary choice, wherever it seems to operate at will (as in distinction, comparison, and again in abstraction), that capricious operation can hardly represent the course of events. And a dire suspicion was then whispered within us. If in inference the conclusion is made what it is by an arbitrary act, how can any such process be true of reality? Our knowledge of the cause will itself be dragged down in the common ruin of all our reasoning, and in the end we must doubt if there is such a thing as a valid inference.

CHAPTER III.

THE VALIDITY OF INFERENCE.

§ 1. The title of our chapter, welcome though it be, excites foreboding. We are glad when we see the harbour so near, but the approach brings with it an ultimate risk and a final anxiety. We have escaped some perils, but our safety has perhaps been dearly purchased. In the course, which we have taken, the worst lies at the end, and that end is before us. We shall hardly sail in with vessel unscathed, and with colours flying; and, did fortune consent, we would gladly compromise. We would change all hope of a triumphant entry for the trust that our voyage might not end at sea. We are resigned to shipwreck, if only by any means something may be saved.

The validity of inference has two main senses. When we ask if a process of reasoning is correct, we may have in our mind two different questions. We might ask if in argument we possess a strict counterpart of the nature of things, if our mental operation truly represents any actual process. And this would be the first question. The second would ignore this correspondence with reality. It would content itself with asking if the premises do logically prove the result. And this latter enquiry is the theme we shall discuss in the present chapter. The first and the more difficult we still keep to the end.

§ 2. But, when we have confined the question of our reasoning's validity to the formal consequence of conclusion from premises, we still find ourselves threatened by a double meaning. Our enquiry might be limited to a search for types, or we might consider as well our practical necessities. And the answer, it is possible, might vary with the question. For conceivably our minds are dowered with a form of ideal reasoning, pure and impeccable, while in practice our arguments are tainted with vice. And so to the question Is reasoning valid? we should have to

return a double answer. It would be valid so long as you made it to order with conditions that never occur in practice; while each actual inference might be fatally unsound. We intend to lose sight of this latter enquiry. We do not mean to ask what sound performances of reasoning are practicable, but what types of argument are flawless in themselves, without regard to the question if any one, or no one, can use them in his work.

But, before we enter on our doubtful search, a word of caution must be given to the reader. He must not look for an ultimate solution. In the present chapter, and still more in the next, we abut upon provinces which we dare not enter. It is impossible to free logic from doubt and difficulty, until metaphysics first has cleared up its own mysteries. And so we must come in the end to issues which really lie in the heart of first principles, such issues as we can not pretend to deal with. Our immediate question will therefore not find an unconditional answer. Inference, if valid, in the end must be valid on a certain hypothesis. The conclusion will follow, given a supposition. Thus we can hope for no more than to arrive at *postulates*, assumptions whose truth we can not here scrutinize, but on which our intellects are forced to embark, if they mean to serve us in the voyage of life.

§ 3. Every inference, as we saw, falls into three parts. We have first a *datum*, then comes an operation, and then follows the result. And our question really asks how the last of these is related to the first. What is given appropriates the result of an experiment; and we demand the title on which it proceeds. We enquire how it justifies the taking to itself of this new possession.

For consider, we agreed that the result must be new. If we had nothing fresh we should have no inference. But, if so, what was given us has suffered a change; it is altered and made different, and made different, we must admit, through our mind's operation. And yet in the conclusion this most ominous fact is quietly suppressed. We unblushingly assert that the consequence follows; but we know that it follows since we know who has dragged it. We protest that C is the property of A. How else, when our hands first stole it and then secretly placed it in his house? And the doubt that

now rises, and the suspicion that points at us, all start from this ground. If it is you, they murmur, who have *made* the conclusion, then it can not be true that you also have *found* it. The new attribute does not truly belong to the subject, if your choice and caprice is the bond of their union.

We must begin with a frank and ready admission. If we really did make of our own free will the conclusion which we come to, if the result did not "follow" of itself from the *datum*, but were pushed and thrust on by our arbitrary force; if (to use a perhaps still more grateful metaphor) we did not "draw" the consequence from the bowels of the premises, but inserted a product prepared by ourselves—if we even chose so to influence our subject, that changed by that influence it modified its attributes—then assuredly the process is invalid and vicious. The conclusion in these cases would not come from the premises. It would come from the premises under a condition, and its truth would depend upon that condition. Or, more properly, the premises would be wrongly laid down; for they should have included the action of our minds. And, just as failing one condition the others are powerless, and in no sense are any a cause of the effect, so, failing the element of our arbitrary choice, the premises we assigned are no premises at all. The conclusion, if it comes, is merely precarious; it is hypothetical. It must wait upon chance, and the result that ensues is given but not claimed.

§ 4. If this is agreed on, then the question that remains seems limited to one issue. Is there reasoning where the conclusion really comes from the unhelped premises? Is there any where the truth of the consequence does not rest upon our interference? Let us proceed at once to a particular example.

We will begin with what seems to be the strongest instance. In a synthetical construction without elision, we appear to be free from arbitrary choice. Given A – B B – C, then, by virtue of the common identity B, we perceive A – B – C; and the conclusion seems wholly inherent in the *data*.

But there comes an objection. The process of inference consists in putting the premises together. Of themselves they lie idly apart in the mind, and by themselves they would still remain asunder. It is surely your mind which supplies

them with an unity, and which gives them a connection which they never possessed. You are held in this dilemma. If you say, A – B and B – C are not really apart, then you falsify your premises. But if they are apart then one of two things; they come together of themselves, or you force them. If you force them, the conclusion is admitted to be false. And they do not come together, since experience shows that they may continue separate, and since their change to union demands something effective which falls outside their discontinuous state. But this agency must lie in the motion of your mind.

Our answer to this charge may begin by rebutting a false assumption. Did the premises change before our eyes into the consequence, it would not follow that *therefore* we changed them. For the premises are held in relation to reality, and reality itself might supply the condition which moved them into union. But, passing by this, let us address ourselves to meet the charge of interference. We may fairly enquire, "If we have interfered, what is it we have done? Have we taken A – B and B – C from the outside and coupled them together? But where is the thong or the chain that restrains them? What glue or what nails have been used to fasten them? And, if their attachment is part of their substance, what is it that we have done to strengthen it?

Our objector might not find an easy rejoinder, and yet we have hardly replied to his difficulty. For assuredly we did something, and that deed was the addition which brought out the consequence. If a change was not made, then we had an illusion; and if passively we stood spectators of a process, then once more we were cheated. And we are fast in the dilemma—If nothing was altered, then there was no inference; but if we altered aught then the inference is vicious. And we admit that we were active.

§ 5. We must meet the dilemma by a saving distinction. We have here nothing to do with the *real* validity of our reasoning process, but solely with its soundness as a logical transition. And hence at present we need to regard our reasoning as simply a change in our way of knowing. But this breaks through the circle which threatened to be fatal,

for it shows a possibility which was overlooked. If, by altering *myself*, I so am able to perceive a connection which before was not visible, then my act conditions, not the consequence itself, but my knowledge of that consequence. It goes to make the consequence in my recognition, but stands wholly apart from this truth which I recognize. Though the function of concluding depends upon my intellect, the content concluded may be wholly unhelped, untouched, and self-developed.

And a logical postulate, to which we alluded, assures us that this possibility is fact. Whether rightly or wrongly, all logic assumes that a mere attention, a simple retaining and holding together before the mind's eye, is not an alteration. If the logical function does not touch the content, if it leaves A–B B–C untampered with, then no viewing them at once or one after the other, nor any attention to one of their elements, makes the smallest difference to the truth itself. My vision is affected, but the object is left to its own developement.

Thus, in A–B B–C, the identity of B is the bond of construction. If I *made* that identity, I should certainly in that case have manufactured the consequence. And it may be contended that it lies in my choice to see or to be blind, and that hence my recognition does make what it perceives. Against such a contention I can here attempt no further answer. I must simply fall back on the logical postulate, and leave further discussion to metaphysics.

§ 6. But another objection remains to impede us. Though our action is confined to the knowledge of the truth, we are summoned to justify the truth of our knowledge. For the content, which we know, becomes different in the sequel, and it does not appear how truth can thus change. We may say that the premises perhaps are not true; we may confine our scrutiny to the soundness of the consequence; yet the puzzle does not vanish. Though the premises are false the conclusion may be valid; but how if the end contradict the beginning? If the premises are true, they surely would not alter; and if they do alter their first state must be false. But even then the last state will not square with the commencement. It destroys the ground in which it is rooted, and, removing its own base, must abolish itself.

Shall we meet this objection by embracing it wholly? Shall we say that our reasoning is a process of correction; that we start with an erroneous view of the truth, and that the consequence is a necessary emendation, which arises from the error when our reflection illumines it? If so, the conclusion in each valid inference contradicts its own premises. It is no extraneous opposite which removes its contrary, and perishes itself in that common ruin. It is the opposite which appears in the decease of its parent, and presupposes a contrary which disappears into itself. The conclusion abolishes the truth of the premises, since, by internal change, they pass into a product which contradicts them.

This doctrine might stagger the traditional logic, but in the main it would not seriously tend to disturb us. Yet we can not wholly embrace its conclusion. It is true that all inference is a process of correction. It is true that it can not ever leave its starting-point quite unmodified. But it is one thing to say this, and another thing to admit that every valid inference contradicts its own premises. No doubt, if all change were itself contradiction, and if knowledge is changed in the act of reasoning, we could not infer without self-contradiction. But I venture both to doubt the general principle and to discern an error in the special application. I admit that in the premises the terms A and C *appear* separate from each other, and that this appearance is removed in the conclusion. But I can not see that the premises do assert the actual separation of A from C. They fail to affirm their interrelation, but they certainly do not go on to deny it. Thus the judgment, "A and C have no connection," would be made by the transformation of a privative absence into a positive exclusion (p. 112). It would turn a mere psychical matter of fact into a logical judgment with respect to content. The *appearance* of A–B without any C is denied in the conclusion which gives their union; but the judgment A–B was not that appearance, nor is this judgment in any way otherwise denied. It is increased but not abolished. There is nothing abolished but our own false prejudice, that what does not *appear* as the element in a whole is *therefore* independent.

§ 7. In the example, which we have taken, my arbitrary

choice does not influence the result. I may choose to attend or not to attend; I may retain and consider, or pass by blindly. And so much as this is left to my caprice. But suppose that I consider, then the premises themselves pass into the result. In what sense my mind co-operates in that passage, is a question of first principles which we can not discuss. But it is clear that my private desire and preference have no part in the issue. Once resolved to see, I am powerless to alter the object of vision.

If we come next to those inferences which use an elision, and where the result does not stand as the whole A – B – C, but is lessened to A – C, we must speak with more caution. The elimination of B depends upon our choice. We must join A – B – C, but to strike out B is by no means compulsory. If so the conclusion will in part be arbitrary. Is it therefore unsound?

It *may* be unsound. If we ventured or forgot ourselves so far as wholly to ignore the middle, if we stepped from the construction to the absolute assertion of one part of its content, we might make a common and most dangerous mistake. If we intend to set up A – C by itself, we must avow the transition and be ready to justify it. And tacitly to assume the independence of A – C is a logical mistake.

But elision does not need to involve this error. It should mean no more than the assertion of A – C, subject to conditions left unexpressed. Since, A being given, there follows a construction in which we are able to perceive A – C, we may say that A – C is the mediate consequence. Or it follows hypothetically at once, if B becomes implicit and is thrown into the base which underlies the connection (cf. Book I. pp. 88–90). Our assertion is elliptic, but in this case is not vicious. On the other hand it becomes unsound, if we pass from the privative, "I perceive mere A–C," to the exclusive "I *can* not see anything else, and so nothing else but A–C is real."

§ 8. We shall return to this point when we come to discuss the validity of abstraction. But at present we must mark a division in our subject. There are certain reasonings in which, as we see, we do nothing but attend or consider logically. And it is a postulate that such perception does not alter the

object. These reasonings may go on to employ elimination, and this addition is arbitrary. But the conclusion is still sound if the addition is recognized. It becomes to that extent hypothetical, and, though elliptic, it may stand; for it does not affirm that *mere* A–C *exists*, but that A–C is *known*.

But, after escaping this first wave, we are met by a rising sea of inferences which all seem arbitrary from first to last. For I need not *compare*, and I need not *distinguish*. Again neither in Arithmetic nor in Geometry am I compelled to construct or forced to analyze. I now do more than attend to the developement of the object. My own hands have interfered, and have procured the experiment which gives the result. And, if so, the conclusion must surely be capricious, or at least must be laid down quite conditionally.

Let us take the instance of free spatial construction. If I move A, B, and C, and arrange them so as to stand in certain relations, I can not proceed to predicate this result of A, B, and C. Hurdles by themselves will not make a sheep-fold, and you can not go straight from the one to the other. The activity of the shepherd must be added to the grounds, it must be supposed and then implied in the consequence. For the shepherd himself does not follow from the hurdles, and we can not regard him as a condition involved in A, B, and C. Hence we must transform our experiment either by adding something to the original *data*, or by recognizing a condition when we state the result. Otherwise that result is palpably vicious. And the doubt may arise if this fatal alternative stops short with our instance of free spatial construction.

§ 9. It threatens to ruin in the first place comparison. For that is a process, and the *data* compared are surely quite passive. Can we say that A and B work out their own likeness, any more than hurdles work into a sheep-fold? Are *they* like? Is it *them* which I see to be similar? Is it not some product of *my work* upon them, and some capricious addition which really owns the predicate? And the same with distinction. Does my process but colour an element which already was there in the premises, or have I added an agent which by combination has produced a new result? If all I know is that something not seen has, by virtue of my act, become

plainly visible, by what right do I claim to have simply made visible and not rather to have *made?* Nor will arithmetic escape. For, as we saw long ago, one and one *are* not two; they *become* the integer, and their becoming seems no change that arises in themselves. But, if so, *they* are not the actual subject which appropriates the sequel: our hand is responsible and can not be disowned. And geometry follows to a common doom. Do those wonderful constructions grow out of the *data*, like branches from a tree? Are those necessary pictures mere sketches of the object? Were we not more right when we likened them to builder's scaffolding, and should we not think here of those diagrams of operations, where we see depicted the hand and the knife? The processes of distinction comparison and construction, all show logical presumptions where mistake is ruinous, and where nothing supports the ground which we stand on.

§ 10. And so once more we have to fall back upon a postulate. Metaphysics alone can judge if we are right, but in logic we are forced to assume that some processes do not modify their consequence. We work round the content and do nothing upon it. Thus retention and joint notice were supposed not to influence the object of vision. And here once again we assume that comparison and distinction and synthesis do not touch nor alter the content of the given, but simply remove an obstacle to our sight, or aid that sight by artificial reflection. It is not with these as it was with our sheep-fold. The position of the hurdles made the sheep-fold itself, and the act of the shepherd did alter that position. But here it is something in the hurdles themselves, their quality, or their number, or again their magnitude, which *appears* no doubt when the sheep have been folded, but itself can not have been *made* by the shepherd. Apart from correction by the study of first principles, the shepherd must predicate the sequel of the origin. He would not be right, if he inserted an intermediate condition. Assuredly, without his capricious act, he might never have come to *see* the conclusion; but, seen or unseen, the conclusion was still there. The process has but altered an imperfect vision; *his* want of perception has been changed to plenty It is *he* that has chosen to let in the light; but the

object, our logical postulate assures us, was there from the first and there unconditionally. Where we state the mere truth, we are bound to eliminate the middle operation.

And our postulates give us the same right of confidence, when we take an idea and suppose it to be real, or when suggestion of predicates brings out a response on the part of the subject. In these cases once more, though our viewing of the sequel is conditioned by our choice and our arbitrary act, yet the view, which we perceive, we must take as unconditional. The process once more has not modified the content. It has placed it in experiment and prepared it for observation, but has left its essence unchanged and unbiassed.

§ 11. It is different when we come to the process of *abstraction*. Where we separate ideally one element from the whole, we not only perform an operation on the given. We not only make a leap from the known to the unknown, when we attribute to the given the result of the act, but we also make this venture on our own responsibility. It is a logical instinct that prompts us to the act; but no logical postulate guarantees the outcome. Reasoning by abstraction has a fatal defect.

For how shall we tell, and what justifies our confidence, that our element remains when the rest is removed? We are burnt and we go from this to "Fire burns." We strike out the mass of accompanying detail, and treat the residue as belonging to the real. But who goes surety that the roots are not twisted, that, in cutting between the reality and its detail, we have not severed some fibres of the selected element? If we find that $a - b$ is true *within* x, on what ground do we rest for our desperate leap to the assertion that $a - b$ is true without condition? It is one thing specially to notice a member. It is one thing to say that this member at any rate is certainly here. It is quite another thing to take that member apart, and to assume that, by itself, it remains what it was when it lived in the whole. This fatal confusion between theory and fact, this blind assumption that our intellect's work must always present us with the nature of things, is a special trait of the "Philosophy of Experience." Bad metaphysic supports it against logic and the cry of facts.

§ 12. If we mean to keep clear of a dangerous venture and really to prove the conclusion which we reach, then, unless by way of an elliptical statement, we can not eliminate where we fail to analyze. If you wish to remove one part from a whole, and maintain it away from its original context, you must find what elements constitute that whole, and you must find exactly what each contributes. For you can not tell otherwise what it is you are taking, and how much is left. Your cutting may not merely loose the string of a bundle. It may have utterly destroyed the connection which maintains the parts in existence. And the result of this is that correct abstraction is guaranteed by nothing save actual experiment. In fact, or ideally, you must divide the whole into certain elements, and you then must make trial with these several factors. You may find that the whole falls asunder into parts, you may find that this whole can be reproduced, when experiment puts the parts together, and that the parts all remain unchanged in the process. You may find that with any arrangement the parts maintain their character, and that the qualities of the arrangements make no difference to that character. And if you were able finally to isolate *a*, you then would see if indeed the consequence were really *b*. Wherever this process is taken as possible, elision and abstraction will demonstrate truths. But elsewhere their result is precarious and doubtful. It suffices to suggest, but it can not prove.

§ 13. If I begin to reason with the integer four, I can divide this integer into separate units, and, by combining these units, I can once more produce the quality of the whole, while every unit remains unchanged. By a number of specific ideal experiments I satisfy myself that the units are indifferent to their junction in this integer, and may be freely treated as independent elements. For example I can show that, first taking one unit and then adding another, I get the integer two, and that I am safe in ignoring and abstracting wholly from the totality four. All this is quite obvious, and the important point is that my abstraction rests on specific experiment. I neglect the given whole and eliminate its detail, because, within my actual experience, I have destroyed

that whole, and have seen that the residue will stand without it. If I take two from four, I know that two is left, since I have proved that the integer does not inter-connect the units in such a way as to qualify them. But, failing this experiment, my abstraction might be vicious. In removing one half of the integer four, I might have sapped and ruined the other half.

This is not the place, nor am I sure that it belongs to logic to discuss the limits of demonstrative proof in the sciences. What logic may hold fast is the assurance that, without *a priori* experiment, arithmetic could not start. And it is certain that soon we arrive at provinces where such experiment is impossible. In dividing the wholes, if we could divide them, we should modify the parts; and in summing these parts we should not regain the wholes. We are here as powerless to construct the facts *a priori*, as we are to dissect them by ideal analysis. And when these regions are reached, as they very soon are reached, then our logical abstraction becomes a venture, and its result can never amount to proof.

§ 14. I must return once more here to a fashionable error. The idea that, apart from specific experiment external or ideal, you can start with the individual and go on to prove an abstract universal, is wholly erroneous. The so-called "Method of Difference" involves a downright logical mistake. It is subtraction employed where arithmetic is not known to be even possible (cf. Book II. p. 339).

From the given total $AB-df$, by removal of $B-f$, we abstract $A-d$, and we argue that $A-d$ is true of reality. But our reasoning depends on the unwarranted assumption that in $AB-df$, we have nothing but units. Take the simple example, "$2+4-1$ makes the integer five, and two units apart from that whole integer are two, *therefore* $4-1$ has the quality of five, or is at least a part of the cause of that quality." This strict application of the boasted method, *unless you confine its result to the individual instance*, brings forth what to me appears an absurdity. And the reason is obvious. The Method identifies, in the whole and outside it, both B and *f*. And, standing upon the Identity of Indiscernibles, it is so far right. But then it goes on to assume the

absence of difference. It takes for granted that A and B make no difference to each other. It takes for granted that *df* is nothing beyond a mere sum. It assumes that the threads, from AB to *df*, neither cross nor are twisted, but run side by side. And this enormous presumption has no sound base. It could be justified by nothing but a specific experiment, ideal or external, which would show that AB—*df is* this bare addition of units. Without this it is precarious, most useful as a tentative means of enquiry, but unsound and imposturous if you take it as proof. We feel tempted to re-christen the Method of Difference as "the method which shuts its eyes to differences."

§ 15. Probability is increased with the number of examples. If to "AB—*df*, B—*f*" you go on to add "AC—*dg*, C—*g*," "AE—*dh*, E—*h*," and "AF—*di*, F—*i*," you approximate towards the certainty of A—*d*. But you *never* can demonstrate; you never can show that *d* follows from A *with any condition*, and still less that, if A were given by itself and unconditioned, the result would be *d*. For you can not presume that, apart from correlatives, A could even exist.

And I venture, in this connection, to raise a doubt which deeply affects some views of first principles. We are sometimes asked, in accents of wonder, how we come to believe that Reality is one. That enquiry is quite reasonable, but in my turn I sometimes feel inclined to wonder what possible ground could assure us of the opposite. For not all of us follow the "School of Experience;" we are not all equipped with an *a priori* principle, which tells us that to every distinction of the mind a division corresponds in the actual world. We some of us still like to start with facts, and still keep up some prejudice for regarding them. And, if so, it is difficult to see what argument from fact could secure our conclusion. For in actual experience we never can find a thing by itself; it is obvious that some context will always be present there. And if, with indefinite variations, the thing remained visible in all our contexts, that could hardly prove that without any context the thing would exist. If we showed that our changes all made no *special* difference to the element, would that tell us that everything contributed

nothing whatever and at all? And the doubt that arises is, whether our conclusion does not rest on the vicious abstraction we have noticed; whether, in short, supposing that single elements *were* real by themselves, it would be possible to get to know this truth by anything else than an unsound reasoning.

We saw, indeed, that analysis and abstraction were often legitimate. But then consider the difference of the cases. Quite apart from the fact that arithmetic deals with unreal abstractions, what is it that is shown with respect to the units? Is it proved, or can it be proved, that units are independent of *every* integer? Did we not, on the contrary, merely show their complete indifference to *any particular* integer? But it is one thing to be free from this or that complex, and another thing to stand entirely absolute. And, if we tried to show that an unit could possibly exist by itself, we should pass from arithmetic to bad metaphysics. For the isolation implies an ideal integer, an invisible whole; and it implies definition by relation to other excluded units. If we recognize these elements our unit is not solitary; if we ignore them we fall into vicious abstraction.

Where analysis is possible, there always remains an implicit condition. And this rises as an obstacle whenever we attempt to raise our result to absolute existence. But where analysis and construction can not be effected, there abstraction is always a hazardous guess, and can never amount to a logical proof. And with this last warning we may leave a most dangerous source of widespread, insidious, and fatal delusion.

§ 16. We may go on to deal with other difficulties. The Disjunctive argument consisted, as we saw, in the passage from a single possible predicate to its assertion as actual (p. 385). This transition depends on a logical postulate, and I do not propose to discuss it farther. It would be easy to raise metaphysical objections, but they would fall beyond the limits of this volume.

When we have once got to a sole remaining possibility, our inference is then to be taken as valid. But how can we be sure that we ever have reached this ground of inference? We saw that, in the end, disjunction depended upon our impotence

to find any other predicate. It seemed to rest on the experiment, "I can not otherwise and *therefore* I must." And this process calls up the gravest suspicion. To state and settle the doubts, which it gives rise to, would imply the discussion of some subtle questions that would lead us too far into metaphysics. Omitting these,* we must content ourselves with trying to consider the problem from its logical side.

§ 17. In disjunctive reasoning we have a subject A. This subject possesses a quality x, and x is determined as one of the discrepants a, b, and c. We go from the denial of a and b to the assertion of c; and this process assumes that x is exhausted by a, b, and c, and that any other predicate will fall, not outside, but within these areas. But how do we know that x is exhausted? How can we tell that no other predicate, such as d, is possible? Our inference is ruined unless this condition is fully satisfied.

Now in subordinate reasonings, where we start from and rest upon preconceptions, it is easy to have a complete division. The division is complete because we have taken certain things for granted. But this postulated omniscience, this factitious totality, must come to an end. When we reach those assumptions from which we proceed, we have then to face the general problem, How can we ever exhaust possibilities, and how can we know that they ever are exhausted?

Suppose that, in the end, we are forced to avow that we rest upon impotence, that we are unable to find any other suggestion, and that certainly nothing else will appear. Is not this the admission that we stand on nought but a privative judgment? And is not this foundation hopelessly unsound?

§ 18. There is one way of escape. The rejection of another and opposite predicate may perhaps after all not be based on privation. It may really spring from exclusion by means of a positive attribute. For suppose that our subject has the quality c, and that this quality is unseen. The

* In my notes for this chapter I went somewhat more fully into this question, but found I should occupy too much space with questions I was not sure were logical.

experiment by disjunction might succeed in making us apprehend *c*. It might cause what is latent to turn explicit, while the real ground we possess for the existence of *c* might not lie at all in the process of exhaustion.

To explain—when *a* and *b* are rejected, the base of rejection may not be any defect in A, but rather the presence of *c* which operates although unseen. And this principle goes further. When we ask, Is there anything possible but *c*, it may be once again the presence of *c* which excludes the idea of an opposite alternative. But, if so, our conclusion would be fully guaranteed. We are assured that nothing but *c* is possible, since the attempt to find a disparate suggestion has made *c* explicit. And, if *c* were not real, we should find ourselves left with a conditional judgment, in which the predicate would deny the subject. But the consequence is that our impotence is *not* the real cause of the conclusion to *c*. It is *c* on the other hand which has caused our impotence. Its strength does not lie in the weakness of our minds, though the experience of our weakness proves its strength. In other words our knowledge of its presence depends indeed on our failure to banish it, but its covert agency it is which procures our open failure. The essence of our reasoning does not really consist in *tollendo ponere*. Ostensibly *tollens* its exhaustion and elision are a useful show provocative of truth. From a tacit position it works *tollendo*, to attain thereby an explicit *ponere* of this latent quality. It is thus a threatened contradiction which compels our subject to reveal a hidden but virtual pretension.

It is scarcely worth while to add an illustration. I may deny that an actual number can be infinite, not because I am unable to form the idea, but because it contradicts a quality of the subject "actual number." I may be sure that a "Personal Devil" is nothing, not merely because of the absence of reason for belief in his existence, but because he implies a self-contradiction. An immoral agent, who was utterly wicked, would fall outside the sphere of morality; for badness, like goodness, involves a collision, and ceases to exist when you make it absolute.

§ 19. Where this kind of disjunctive inference can be

practised, the conclusion it procures is logically certain. For the predicate, which emerges, is not won by exhausting every possible antagonist. The subject has not actually been altered by the choice of our ideal experiment. It remains what it was. Our own eyes are the real subject which has suffered the operative process, but nothing is removed save impediments to vision. If we keep to the limits already laid down, then logic is pledged to bear us unharmed through all logical objections.

We are open to attack from another quarter; for we may fairly be charged with the sin of desertion. The process, which we adopt, may be saved from every assault of the enemy; but what, it may be asked, has become of the disjunction? For this suggestion of an opposite, which leads to reflection on what lay in our minds—this going from the experience of "I can not otherwise" by an inference to the ground of our incapacity—(however sound and however ultimate the process may be) does not seem a *disjunctive* argument at all. Since the residue is in fact a preconception, since the exhausted alternatives were never possible, the conclusion does not depend on exclusion. It is not in effect the mere assertion of a residual element, and this show and pretence is a hollow form which is simply deceptive.

There is truth in this objection. The disjunctive argument, if you take it seriously, is not the process we have just sketched and defended. This process does appear in the form of disjunction. An exhaustion is the mode in which we clothe it, and the shape which it bears, if you take it as a fashion of opening our eyes. But the exhaustion itself is not that which demonstrates. The possibilities banished were never possible. And the experiment is so far from serving as a ground, that the process consists in its total rejection. But the objection may perhaps find its answer in a doubt. If disjunctive reasoning is not willing to take the place which we have offered it; if it aspires to be more than a road to vision, and a way of reflection which brings the actual ground into light, is it likely to maintain its claim to existence? Is our seeming desertion not a counsel to throw off a character assumed, and that leads to condemnation?

§ 20. For, taken in the guise which it prefers to wear, the disjunctive argument will not bear a trial. Apart from a borrowed assumption of completeness, the ground it stands on is wholly rotten. If it really goes from the absence of *a* and *b* to the presence of *c*, and if it takes this step *because* it has failed to find other possibilities, then it sins against a cardinal logical principle. It treats a mere defect in its knowledge as equivalent to a positive quality in the content. The fact that A, as it now appears, is wanting in *d*, is no proof that A – *d* is a false proposition. You can not identify the subject, as it stands under psychical conditions, with the subject as fully determined by content. You can not in short, by any kind of handling, make a privative judgment become an exclusion (cf. Book I. Chap. III.).

If my reason, for thinking that A – *d* is false, is simply my failure to find *d* in A, then the subject, which I deal with, is the subject as qualified by my mental defects. It is not the mere content A which excludes, but it is A taken together with that stage of ignorance, at which my psychical history has arrived. But this absence of knowledge does not logically determine the content A. It is an abstinence which reveals no actual quality within the subject; for there can not be virtue where temptation as yet has not happened to assail.

To put the case otherwise, if *d* is not impossible, if it is simply unreal; or, more strictly (since everything unreal is impossible), if *d is not* impossible because, if it were, a quality of the logical content A would be *contradicted*—if *d is* impossible, because otherwise our knowledge of A would be *altered*, and if *this* is the only reason we can give for *d*'s non-existence—then our inference is precarious, its process is unsound, and its conclusion but begged. We may be forced to put up with it, but we must not try to think that logic guarantees it.

§ 21. We may sum the matter so. If, in saying "I must because I can not otherwise," we mean "I must not otherwise because I do thus, and I know that I do thus because I can not do otherwise," then our inference may not bear the name of disjunction, but it is thoroughly sound and faultless in principle. But, if, on the other hand, the essence of our

argument is "I must do this, because I do not perceive that I do aught else," then that argument may not reach a false conclusion, but, considered as a proof, it is thoroughly vicious. And, if this is what we mean by disjunctive reasoning, our process in the end is based on a fallacy.

And this opens the door to a sceptical doubt. Must not both these varieties, if we determine to go back, resolve themselves into cases of the second? Does our proof depend on anything beside the ignoring of another discrepant alternative? This doubt does not cease with the province of disjunction; it attacks the whole system of our judgments and inferences. If all judgment in the end becomes an inference, when reflection suggests an excluded predicate, and returns to the subject from that repulsion—if this, as we saw, is the ultimate inference—does not every judgment in this way become a *vicious* inference? For it either is held for no reason except that it has not been questioned, or, when attempted, it succeeds in keeping its virtue for no other reason than the absence of suggestions fit to corrupt it. And this absence is assuredly the chance of privation. We are forced to admit a theoretical possibility of our knowledge being otherwise, if our ignorance were less. And, if so, with each predicate, we can not deny the possible existence of unknown alternatives. To dissent is to assume something like omniscience, and to agree is to vitiate every inference.

§ 22. We might reply that, even if we did not merely assume, but really possessed entire omniscience, we should still by the argument be compelled to doubt and to disbelieve. And this consequence, the legitimate offspring of scepticism, shows features distressingly like credulity. But it is better to attempt a direct refutation. The sceptical doubt, here as elsewhere, will at bottom be discovered not to be sceptical. It assumes a foundation on which it stands to batter down its dogmatic antagonists, and that foundation itself is always uncritical though covert dogmatism. We can see this at once in the present case. We found (Book I. Chap. VII.) that the possible must rest on the real. Possibilities exist in hypothetic judgments, and consist in the assertion that, given some conditions, a subject would certainly

possess some attribute. This simple reflection has important results. For if you say that, with every piece of our knowledge, we are bound to admit that it might be otherwise, you assume that with every subject you can frame a valid conditional judgment in which it acquires a discrepant predicate. Thus, given A – *b*, you assume the existence of a possible *c*; and since the pair, A and *b*, are coupled not by virtue of any special attraction, but solely because *b* happened to be there when A was unoccupied, hence the relation A – *b* is itself but possible.

Now the answer is this, that, if your conclusion is true, you either have failed altogether to prove it, or have proved it by means of a false assumption. For you yourself have ignored a possibility. Suppose that your effort, everywhere to find a disparate suggestion, were somewhere unsuccessful. Suppose that, attempting to make a judgment in which the subject developed a predicate inconsistent with the character already possessed, you somewhere found *your* impotence and the limits of your thought. If you wish to be sceptical, you must cease to ignore this fatal alternative. For seeking a possible quality *c*, incompatible with the present judgment A – *b*, you may end for ever in a blank defect, or for ever arrive at a *c*, which *seems* to be discrepant with *b*, but which falls on scrutiny within its area. And, if this is the case, then to doubt A – *b* is presumptuous dogmatism. You can not assert that its opposite is possible, until you are able mentally to represent that opposite.

To doubt where you have but a single idea, to balance opposites where one opposite is lacking, to suppose that the inconceivable is true, would be surely mere forms of one self-delusion. The question at issue turns on the fact of there being these opposites. The real existence of these ultimate doubts, the very possibility of these possibilities is the point where you are met by a flat denial. You can not escape a metaphysical discussion by metaphysical dogmatism in the garb of scepticism. And, whichever way we may decide this question, we certainly can not decide it off-hand by a simple argument *a priori*. We must meet the sceptic by a deeper scepticism. His conclusion, if true, has been merely assumed.

Whether right or wrong in the ultimate result, his process has consisted in begging the question at issue between himself and those who dissent from him.

§ 23. The actual question belongs to metaphysics, and we can not attempt to consider it here. A logical enquiry must remain content with a simpler result. If the subject of privation be identified with the true and real subject, then, on that assumption, disjunction is valid. The formal consequence of conclusion from premises is then unimpeachable. But the premise which maintains complete exhaustion is merely precarious. If, on the other hand, we wish for a process which is free from doubt, then, while it assumes the form of disjunction, it must really proceed by exclusive assertion. It must argue from presence and not from defect.

And, with this, the remarks which we are able to offer, may come to an end; and we shall say no more on the formal validity of our types of inference. Dialectical reasoning has not been discussed, but would not present us with new conclusions. Our main result may be so summed up. Arguments, so far as they amount to demonstration, have been found to depend upon logical postulates. It is assumed throughout that some operations do but change our power of perceiving the subject, and leave the subject itself unaltered. And this holds even where our wilful and arbitrary choice selects the process and procures the result. The gain which the subject appropriates in the end, is here its original and rightful possession; while the loss and the struggle from defect to growth is the lot which falls to our finite intelligence. But these postulates in the end we left unexamined.

§ 24. We have still before us a very grave question. In our final chapter we must ask whether inference is *really* valid; if, that is, beside making good the conclusion, its process has a claim to be true of facts. We may here, and in passing, allude very briefly to another difficulty. We saw that, though our types might all be flawless and formally accurate, we might still be quite unable to use them. The conditions required for a demonstration might never occur in actual practice. Our types might be ideals, visible in heaven, but too far and too pure for human attainment.

We may indicate the principal source of our corruption. What we use in logic is ideal content, and that content, we have seen, can have by itself no mental existence. It must always appear under psychical conditions, and hence comes a continual tendency to error. If we confuse the context with the actual content, we are sure to vitiate the whole logical process. For since we do not know exactly what we have in our hands, what we actually use and what we neglect, we turn a judgment, that should be categorical, into a judgment that depends on a latent condition. The form, in which the conclusion comes out, will depend on the presence of impurity in the agents. Take for instance A – B and B – C as premises, with a result A – C. The construction here depends on the identity of B in both these premises. But suppose that, in the second premise, C is not really connected with B; suppose that it really belongs to Bx, and that we have neglected to notice x. The relation with C will then depend upon the context, while we have assigned it to the bare and simple content B. Thus a condition has crept in and has destroyed our reasoning. And hence to reason rightly demands a purity which is based throughout on elimination. Since we must have identity, and can not but have difference, we depend for our success on preserving the material, while eliding the irrelevant elements of our premises; and this process is subjected to the risk of error.

§ 25. We can not any further pursue this theme, but may end our chapter with another word against the sceptic. We are bound to admit some degree of probability in favour of the badness of any one inference; and the sceptic once more may urge his objection, If every argument is *probably* false, how can any argument be *certainly* true? But the answer is simple. Considering my reasoning as a number of acts, I conclude that I am fallible throughout the series. But this chance is mere *antecedent* probability. It may become unmeaning when the instance is present and actually before us; as unmeaning as the chances against a die giving six, when the actual throw has been observed. And, if so, the presumption of our fallibility may warrant a general feeling of diffidence; but it can not affect any actual inference which has

once been seen to exhibit the type required for demonstration. If *in the present instance* you can show me no ground which justifies doubt, your mere general probability is quite irrelevant.* Whether it is true that in *every* case we have actual cause for hesitation, is a question of fact to be settled by itself. This question of fact, which perhaps underlay the objection, and which has appeared in the answer, can not here be discussed. We must concentrate our thoughts, since we are summoned to encounter our ultimate problem.

* There is a somewhat similar fallacy in Mr. Spencer's *Psychology*, vol. ii. p. 430. You can not argue from the general probability, that a longer argument has more chances of mistake, direct to the conclusion that a short argument must be more trustworthy than a longer one. In order to do this, you must assume besides, that arguments differ in nothing material except their length.

CHAPTER IV.

THE VALIDITY OF INFERENCE (*continued*).*

§ 1. In the foregoing chapter we limited the question of our reasoning's validity. We discussed the possibility of getting an inference which amounts to demonstration. We asked whether any conclusion does follow, when the premises are assumed. To this limited question we were able to return an affirmative reply. If we admit certain postulates, then there assuredly are types of necessary reasoning. It may be difficult to practise the rules which they enjoin, but we may say at least that, given the conditions, the consequence *must* follow. And so far, though relying on the strength of postulates, we have succeeded in holding the position which we occupied.

But we now must await a more dangerous attack. Our inference may be valid, if valid is to bear the sense of *conclusive;* the consequence may follow and be true, if the premises are not false. But what shall we answer, when asked if our reasoning is true in reality, and valid of fact throughout all its process? It is not enough to reply that surely it comes out true in the end. For the outset and the journey might both lie in a region of convenient falsehood; and the question, which is pushed and which can no longer be fenced with, directs itself to this fatal weakness. If truth is the ideal counterpart of fact, can we say that the process of our reasoning is truth? Can we venture to assert that our mental operations are the same with any actual process in things? Is the intellectual experiment the parallel of a movement in the real universe? Our reasoning, we know, does answer to the facts, but that is not enough. Can we call it the literal expression of those facts? Is reflection the double of an outward change, that shows feature for feature in an answering element? Or is it an indirect process, which

* Cf. Lotze, *Logik*, Buch III. Kap. 4.

results in a picture, but which, taken in the middle, could not be recognized? We may doubt if the end, when we get it, is a copy; and we may doubt still more if the means is a copying, or in any sense a counterpart.

§ 2. We can not dwell on this question in its ultimate form. We can not decide if an activity, which appears in our reasoning, is one with a force that alters reality. It is not that I think the question improper, but that in this volume it could not be discussed. For the very existence of any force or activity is itself a point which we are not able to assume; and without this assumption, the question we have mentioned would of course have no meaning.

But, if we lay no stress on the question of activity, and confine ourselves mainly to the actual change, the problem in hand may thus be stated. In our reasoning a *datum* suffers alteration; undergoing a change it appropriates the whole, or at least some part of the new result. And does the reality transform itself in unison? Do the facts themselves exhibit alterations parallel with the series that appears in our argument? Is this always the case, and again, if not always, is it *ever* the case in any possible argument?

§ 3. The result, we have reached, forbids us to accept the first of these alternatives. Where the middle of our process does not answer to the cause, where it is not the reason of the conclusion's existence, but merely the ground which we have for belief in it, in every such case our mental experiment does not even pretend to reproduce fact. The equality of A and of C to B is *our* cause for the judgment "C is equal to A," but we can not suppose that this change in our knowledge has an answering birth *in rerum natura*. The last relation does not spring from the original pair. The result in our minds is no actual result, the change in our minds is no change in things, the mental experiment, if you compare it with the fact, has no existing counterpart at all. If the real world is not far other than it seems, then the course of our ideas, at least in this case, can not possibly be true.

The conclusion does not really result from the function; for if it were not there before, we admit it would be false. On the other hand it can not be given, already and at

the start, for in that case we should have no inference at all. But, if so, then both movement and issuing change are false appearances ; they belong to our minds, and are not true of things. This fatal consequence affects all inferences, where the middle does not represent the cause. And then the middle, we may go on to urge, can be wholly capricious. It may arise from nothing but our arbitrary act.

For consider the processes of distinction, comparison, and again abstraction. I need not perform these ; I experiment or not, as it happens to please me. But is it possible that whenever I happen to be pleased, the things have somehow changed themselves harmoniously ? How frivolous an idea, but how inevitable ; and yet once more how wholly indefensible. We have hitherto concluded from our logical postulate (which assured us that our change did not alter fact) that the conclusion was there and came out to be seen. But now we seem confronted with three alternatives. Our actual process may be foreign to reality, and falls outside it in our mental world. Or an actual and answering change has taken place, and the facts are transformed by our caprice. Or lastly the course of things runs parallel by an overruling harmony. Any one of these alternatives seems attended with ruin.

§ 4. (*a*) Suppose first that our arbitrary choice has modified the facts themselves, that no quantities are equal until we have compared them, nor anything different before we have distinguished, and that these functions *make* the object which they contemplate. If so we of course must surrender our postulate, and allow the result to become conditional. The things, if you leave them alone, are *not* equal, since equality depends upon your capric But, with this result, we not only give up what before seemed true, but we can not accommodate our view to the facts. Unless the world is quite different from our common beliefs, unless we turn upside down our ideas about reality, we therefore can not accept this first alternative. And if (*b*) we next make trial of the harmony, we find ourselves still immersed in difficulty. For suppose that, when I argue, the world is changed, and a process takes place conformable to my movement, then, unless we think that the world goes by chance, there must be some

kind of reason for that change. But the conclusion, as we have it, is then incorrect; for the condition of the process is completely ignored. We must therefore set down, not A by itself, but A + x as equal to C. But what is this x? If it is other than our act, then once more the things diverge from the course which is taken by our thoughts.

§ 5. "But the x," I shall be told, "though it is not the act of *our* intelligence, is still the function of an understanding. Phenomena are ruled by a reason not mine, and my argument, capricious in regard to its existence, is compelled and subject in respect of its content. If I make it, I must make it on a certain model, and this model is the work, long done or now doing, of an inference precisely the same as mine. This double process of a two-fold mind unlocks the puzzles by which we are enclosed."

I should be sorry to seem to persist in unbelief, but I am compelled once more to repeat the dilemma: If the reality in this way corresponds to logic, then reality itself has been wholly transformed. One may perhaps accustom oneself to regard events as the reasoning sequence of the divine understanding, but it is not so easy to bring under this head any sameness and difference that is thought to exist. We are forced to wonder, if things by themselves are really *not* alike, how God himself can find them the same; or how even God goes on to distinguish them, if they themselves are *not* really different. It is indeed possible here that a distinction might save us, that a sensuous ground, which *is* not different, when taken together with a function of the intellect, produces alike both distinction and difference. And yet this solution is partial, and leaves a worse puzzle behind.

We might perhaps agree that reality is the work of a reasoning mind, but how can we submit to the belief that *my* reasoning must represent reality? How can we suppose that each trivial argument, every wretched illustration that we may have used in these discussions, provided only it be free from flaw, must have its direct counterpart in the nature of things. You may suppose that, whenever we reason, we retrace the solidified logic that is organic in the world; you may believe that a mind, in union with our own, brings out

by one process, that to us seems double, the separate sides of existence and truth. But, on either view, we are troubled with this consequence; every possible piece of mere formal argument, every hypothetical deduction from an idle fancy, all disjunctive and negative modes of demonstration, must each have its parallel counterpart in reality. This consequence may be true, and I will not deny it. But, if true, to me at least it is portentous. Our logic will have secured correspondence with fact, but the facts themselves have been strangely translated.

§ 6. If we mean to keep to a view of reality which is anything like our common ideas (and apart from a system of metaphysics we can not, I think, do anything else) we must come in the end to our third alternative (*c*). We must admit that, although a valid inference in some way must answer to the nature of things, yet at least some reasoning does not show that nature. It exhibits a process essentially different from the actual course of real existence. Even if you believe that it comes right in the end, yet throughout its movement, it diverges from the truth. Unless you revolutionize your belief about reality (and perhaps you ought to revolutionize that belief), you can not maintain the strict correspondence of thoughts and of things.

We have seen so far that, at least *sometimes*, our movement does not answer to the course of reality. But we are not allowed to get off with this compromise. We must prepare for a still more fatal sentence. We shall have to see that our mental experiment can *never* represent the actual event. And our conclusions also are threatened with falsehood; for our arguments can not even finish with a truth. Both process and result diverge from given reality. They no doubt may be valid in the sense of serving, they may go near enough to convey the meaning, but neither can be called correct translations.

§ 7. If the result seems strange, it is strange because we have not remembered our account of judgment. It is in a judgment that our reasoning must end; and our natural impulse is to think that ideas are divided and joined like the things which we know. But we saw that this notion could

not be verified. Our hypothetical, disjunctive, and negative judgments were none of them found to represent facts. There was nothing left which, if truth is a copy, could possibly be true, save only the class of categoric judgments. And, seeking for these, we failed wholly to find them, so long as we kept to the series of phenomena. All our ordinary truths, every single affirmation we were able to make about the course of events, turned out in the end to be hypothetical. We tried in vain to get right down to the facts; we were always left with an artificial extract and a fragment got by mutilating things. And this product failed of truth in two ways. It left out details which it ought to have copied, and it depended on details which did not exist. However you took it, it turned out hypothetical, and the elements which it connected lacked actual existence.

§ 8. And this failure was a symptom of our logical disease, a weakness not passing, nor local in its area, but deep-rooted in the system. For judgment and inference, if we are to have them at all, must both be *discursive;* they must work with ideas. But ideas do not exist, and they can not exist, if existence means presence in the series of phenomena. I do not mean merely to press the obvious consequence that a thing can not be in two places at once. I do not mean that ideas, being inside my head, can not also and at once be found outside it. I mean much more than this. Neither outside my head, nor yet inside it, can ideas have existence; for the idea is a content, which, being universal, is no phenomenon. The image in my head exists psychologically, and outside it the fact has particular existence, for they both are events. But the idea does not happen, and it can not possess a place in the series. It is a mutilated content which, as such, can not claim to be more than an adjective. And the functions, that work with these unrealities, can not possibly reproduce the flow of events.

§ 9. This discursive nature of judgment and reasoning is fatal to their claim of copying existence. The process of the inference can never be true, and the result can never represent the fact. We will not waste time on less mortal objections that destroy weaker forms of logical thought, but

will at once proceed to the strongest instance. Even where the middle seems to answer to the cause, and the conclusion to exhibit the actual effect, yet even here the movement in the mind is not the same thing as the movement of facts; the premises can not exhibit the conditions, and the conclusion is very different from the consequence in time.

In our inference we have first the elements apart, then follows their union, with the issuing result. But the elements that occur in the course of phenomena do none of them possess an isolated being. They can not exist every one by itself. Apart from one another they indeed may be found, but none separate and divorced from all other existence. Yet this context, which makes them real as events, and without which they could not appear in the series, is ruthlessly stripped off in our mental experiment. And so, what we use in that ideal synthesis, is nothing but an artificial preparation. We operate with content and not with existence. Our elements are nothing in the world but adjectives, and adjectives whose substantives we fail to state. We indeed treat them as actual, we attribute them all to the ultimate reality; but reality, in the sense in which we have chosen at present to take it (the sense of a being that exists within the series of phenomena), refuses to maintain the existence of our elements. It supports them hypothetically, and on the strength of conditions which we are powerless to fulfil.

§ 10. And as the separation of the elements is not true, so also their union and construction is fictitious. I will not raise again a former objection, though it weighs, I admit, in the adverse scale. If *our* minds did not work by way of construction, the premises would hardly come together of themselves; and can we say that, in the outward movement, there is anything like an answering activity? We will suppose that this question has been answered in a way which favours the claim of our inference to truth. But, be this as it may, the movement in our mind remains discursive symbolic and abstract. If the facts come together on just the same principle on which we unite our ideal elements, yet they can not come together in just the same way. The real is divided from the mental union by an insuperable difference.

The synthesis of facts may be partly the same as our mental construction; but in the end it diverges, for it always has much that we are not able to represent. We can not exhibit in any experiment that enormous detail of sensuous context, that cloud of particulars which enfolds the meeting of actual events. We may say indeed that we have the essential; but that plea reiterates the charge brought against us. It is just because we have *merely* the essence, that we have not got a copy of the facts. The essence does not live in the series of events; it is not one thing that exists among others. If reality is the chain of facts that happen, then the essence is a creature which lives only in the thought which has begotten it. It could not be real, and it can not be true. Our construction is as false as our separate premises.

And our conclusion can hardly fare much better. Begotten of falsehood it can not so far be misbegotten, as to show us in the end the features of fact. The parental disease still vitiates its substance. Abstract and symbolic it mutilates phenomena; it can never give us that tissue of relations, it can not portray those entangled fibres, which give life to the presentations of sense. It offers instead an unshaded outline without a background, a remote and colourless extract of ideas, a preparation which everywhere rests on dissection and recalls the knife, a result which can not, if events are reality, be aught but unreal.

§ 11. And no possible logic is exempted from this sentence. If we recur to that type, which we found or fancied, where the real and the logical seemed wholly one, if we come in the end to the Dialectic process, we can not escape the point of the objection. For, if the starting-place we leave were real by itself, if it were actual so as it first comes before us, what sufficient excuse can we plead for leaving it? Why do we correct and supplement it, if it is true? You may say that a parallel alteration and amendment is the actual course of the genuine reality, but I confess to my mind that solution is a failure. If you think that the element, with which you began, was apart by itself in the field of reality and within that vacuum began to develope, then to me the whole question is lost in darkness. But if you admit

that a movement took place by virtue of the action of the total system, then surely we must add that, apart and by itself, our element was *not* real. Both its isolation and its subsequent evolution took place within a completed universe, and without that universe would have been nonentities. And, if so, our process is but partially true. It depends on conditions which it fails to state. It does not answer to the working reality.

Both our starting-place and our process of advance and the provisional goal at which we arrive, are none of them true of the actual world. If you take them by themselves, they can hardly be more than our way of thinking. Our knowledge and reality would never be one, until in our minds the self-conscious Universe were to follow itself throughout all its productions, and comprehend itself in the whole of its detail. And, if that pass were reached and that hope consummated, it is doubtful if then our knowledge would be logical, and if it could still bear the form of a discursive process.

§ 12. It seems hardly worth while to follow any further this line of objection. We may however recall a further point, with which we will bring the discussion to a close. Even if the process of our logical movement seemed ideally to counterfeit the course of phenomena, and to present us with the actual changes of events, yet, if this by any means could be believed, we still fall at the end into hopeless confusion. For if it were not for *our* inferring, we never should have had this series of phenomena. It is not merely the separate strands and fibres of causation, but it is the whole continuity of the total series which is absolutely based on ideal reconstruction. By means of this function, and this function alone, we have connected the past in one line with the present. It is by this alone that we have acquired our knowledge of phenomenal changes; and it is this creation we approach with that series of inferences which attempts to exhibit the threads of causation. But if reality is not to be the work of our reasoning, if it is to lie within mere presentation, then the train of events are themselves not real. They themselves are nothing but a false construction; and a mental sequence that portrayed them truly, as we believe them to exist, would itself be *therefore* untrue to given reality.

For unless we think that phenomena can be real, though they appear to no one, we must hold that the past, *at least as we know it,* has no existence outside reproduction. But we know what is past by synthetical judgments, and they are a function which depends on a ground. This ground is the principle of the Identity of Indiscernibles; it is because the ideal content *seems* the same, that we *therefore* assume it to be really identical, and identical in spite of change and diversity, despite the difference of its two presentations. But how shall we dare, on the strength of this principle, to treat the ideal as if it were real? What help could we expect from the School of Experience, if our only way to rehabilitate their fact is to violate their most sacred and continuous tradition? Can we safely go from the appearance of sameness, within the mind which compares, to a real identity that connects events? Can we pass from ideal redintegration to actual continuity of fact? If we can not, then forthwith the series of phenomena becomes unreal, and our reasoning which follows the chain is illusory. But, if we can, then at once our idea of reality is quite transformed. Our reasoning will be true because the facts are themselves inferential. We thus either have relinquished the presumption that reality lies in what is *given* to sense, or are compelled to admit that a *serial* reality is itself a bad inference. On either alternative we have ended in confusion.

§ 13. To sum up the result—if reality consists in an actual sequence of sensuous phenomena, then our reasonings are all false because none of them are sensuous. And still more if reality is wholly confined to the given in presentation, then the inferences which try most thoroughly to follow the facts, are therefore and on that account the most false. And reality, it would seem, must be thus confined, since its prolongation is merely ideal. It is lengthened on the strength of the Identity of Indiscernible Content, and it ends in a link which is ideal also. The past can not be restored in its sensuous fulness; the detail is not literally present to the mind. It is judged to be there; but such judgment is nothing but a general indication, a symbolic reference to a context, whose main character and import still survives, but whose complex particulars are perished irrecoverably. And in the end we are forced to hold to one of these

conclusions; our reality is *not* that which appears to our senses, or else, if *truth* is to present us with *facts*, our reasonings are every one of them false.

§ 14. It is idle to urge the argument from success. It is useless to reply that the mass of our results is enough to prove the truth of our presumption, and to show that our reasonings are identical with fact. You can not plead that, because logic works, logic can not be wrong. For the answer is simple. If logic succeeds, then logic is not wrong to work as it does work. It is practically right beyond all suspicion, but for all that it may rest on theoretical error. It must answer to facts so far indeed as to answer our purpose, but withal its assumptions may be downright false, and its principle may turn on unblushing fictions. You can not assert that, if a science goes right, that science is unable to start from false premises. Have not brilliant results in the study of nature been obtained by the help of such working hypotheses as hardly pretended to be more than fictions? And why should not logic, if it shares the success, share also in the falsehood? We should surely be satisfied if discursive necessity, though itself nothing real and not strictly true, runs parallel with reality, and is throughout corresponding to our practical needs.

§ 15. For this seems the dilemma to which we are brought. If we keep to the ordinary belief as to fact, or to anything that is like that ordinary view, then *either* our account of the nature both of judgment and reasoning must be radically wrong, *or else* these processes are no proper counterpart of the accepted reality. We can not at the end of these toilsome marches accept the failure of our whole expedition; and we are led to seek for a place of provisional rest in the second alternative. And perhaps it is not our reasoning that will suffer a loss of dignity. Why should not that view, which finds reality within the series of temporal events, be itself degraded to the rank of an illusion? Why should not the result of the deepest philosophies after all be the truth, and our sensuous presentment be misrepresentation that can not give fact? In this case, if our logic diverged from the given, it perhaps after all has been wiser than it knew of. Unawares

it has followed the hidden reality, and against itself has throughout been true.

Possibly this may be, and, if so, an old dream would gain fulfilment. But too probably, again at this final moment, a rival alternative might shatter our hopes. Although the reality is, for certain and assuredly, no series of phenomena, may it not still be something other than thought, or contain at the least an alien element? Then, if so, this genuine fact, when we found it, would remain out of oneness with discursive intelligence, or intelligence altogether Our logic after all may turn out to be false, if truth means complete identity with the real, or implies an accurate unfalsified copy.

§ 16. But what is it guarantees this presumed identity of truth and fact? We have an instinct, no doubt, that leads us to believe in it, but our instincts, if they can not be in error, may at least be mistranslated and misunderstood. And here we seem placed between rival promptings, that contend for mastery over our reason. It is an old preconception that reality and truth must contain the same movement of a single content that, by itself not intellectual, then doubles itself in the glass of reflection. On the other hand it is a certain result that our intellect and the movement of our intellect's content is abstract and discursive, a mere essence distilled from our senses' abundance. And this certainty has inspired an opposite conclusion. Since the rational and the real in truth must be one, and since these vital essences are the life of our reason, then, despite of seeming, the reality too must consist and must live in them. If the real becomes truth, then so without doubt the truth must be real.

In the face of these promptings, I must venture to doubt whether *both* have not branched from one stem of deceit, whether truth, if that stands for the work of the intellect, is ever precisely identical with fact, or claims in the end to possess such identity. To the arguments urged by the reason, and which demonstrate that an element which is not intelligible is nothing, I possibly might not find an intelligible reply. But I comfort my mind with the thought that if myself, when most truly myself, were pure intelligence, I at

least am not likely to survive the discovery, or be myself when I wake from a pleasant delusion. And perhaps it may stand with the philosopher's reason, as it stood with the sculptor who moulded the lion. When in the reason's philosophy the rational appears dominant and sole possessor of the world, we can only wonder what place would be left to it, if the element excluded might break through the charm of the magic circle, and, without growing rational, could find expression. Such an idea may be senseless, and such a thought may contradict itself, but it serves to give voice to an obstinate instinct. Unless thought stands for something that falls beyond mere intelligence, if "thinking" is not used with some strange implication that never was part of the meaning of the word, a lingering scruple still forbids us to believe that reality can ever be purely rational. It may come from a failure in my metaphysics, or from a weakness of the flesh which continues to blind me, but the notion that existence could be the same as understanding strikes as cold and ghost-like as the dreariest materialism. That the glory of this world in the end is appearance leaves the world more glorious, if we feel it is a show of some fuller splendour; but the sensuous curtain is a deception and a cheat, if it hides some colourless movement of atoms, some spectral woof of impalpable abstractions, or unearthly ballet of bloodless categories. Though dragged to such conclusions, we can not embrace them. Our principles may be true, but they are not reality. They no more *make* that Whole which commands our devotion, than some shredded dissection of human tatters *is* that warm and breathing beauty of flesh which our hearts found delightful.

§ 17. But be this as it may, one result is most certain. If these pages have not erred from beginning to end, there is at least one thing which we are safe in rejecting. No cheap and easy Monism can stand before an enquiry into logic. The parallel series of sense and of thought, phenomena presented by simple observation and reasoning that retraces the chain of presentations, may both be banished to the region of illusions. If the string of appearances could possibly appear, if conceivably their sequence could be given as fact, yet assuredly logic could never reproduce them, nor supply us with a

truthful counterpart and copy. The desire to comprehend our Universe as the double outgrowth and revelation of a single principle, depends on a genuine impulse of philosophy. It will hardly be fulfilled without patience and criticism, and never if we start with a blind acquiescence in the coarsest prejudices of popular thought.

THE END.

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